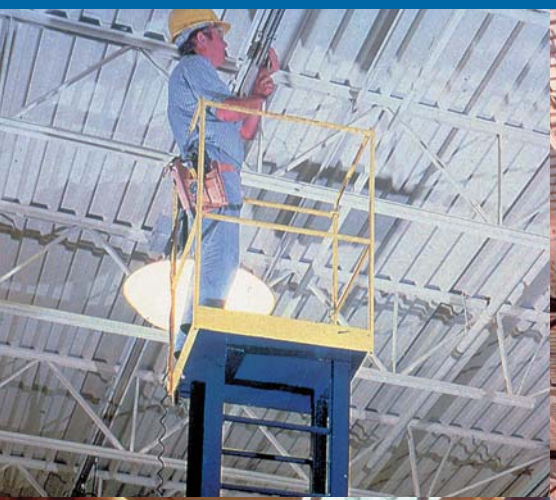
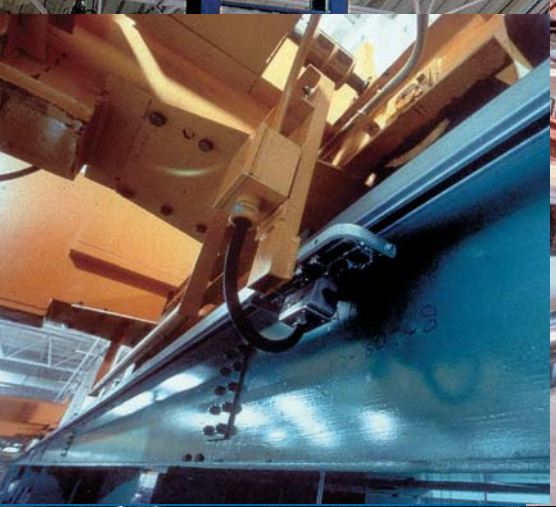
Thomas&Betts

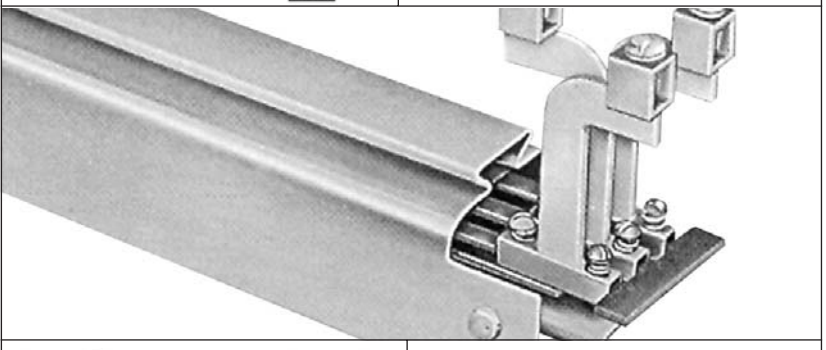
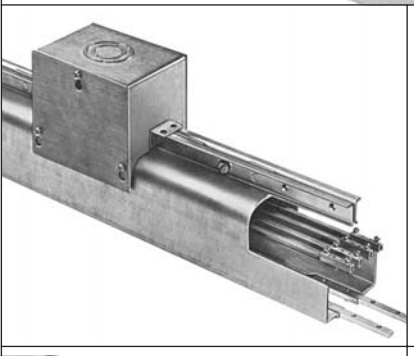
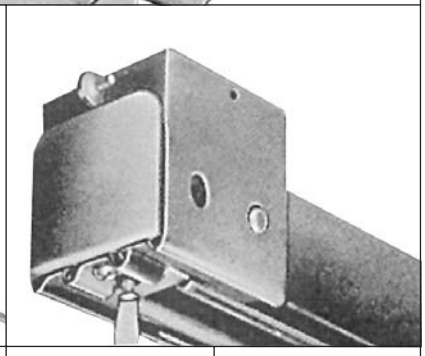
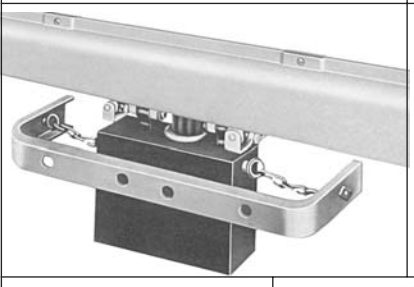


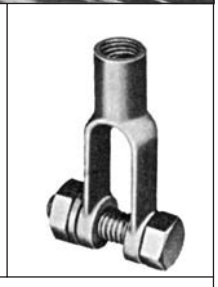
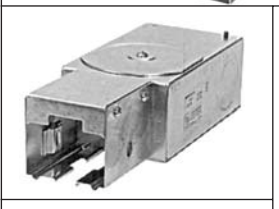
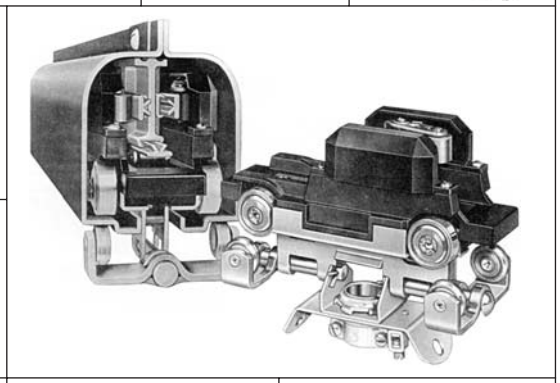
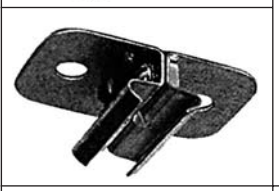
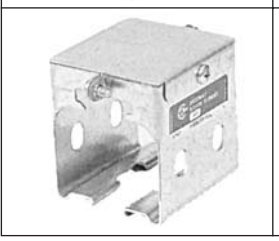


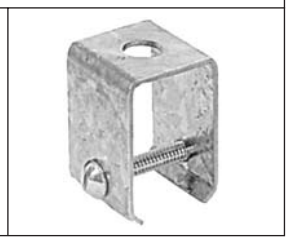
Feedrail®

Overhead Trolley and Plug-In Busway Electrification Systems.

Effective January 2002



Feedrail®

Trolley & Plug-In Overhead Electrification Systems 4-27

Multi-Conductor Trolley Busway Electrification Systems 28-48

Trolley Busway and Crane & Hoist Electrification Systems 49-75

Heavy Duty Crane and Hoist Electrification Systems 76-88

Replacement Parts 89-98

Index 99-

Feedrail®

Genuine Feedrail® … If it doesn't say Feedrail, then it isn't.

Genuine Feedrail® Delivers Flexible Overhead Power and Control of Equipment In Motion.

Feedrail® offers a complete line of Overhead Trolley and Plug-In Busway Electrification Systems. With over 50 years in the business, we understand moving applications, and can address the questions and problems involved in selecting a power source that will move with your application.

A host of applications.

Feedrail® developed a moving source of electrification to answer the needs of the sewn products and automotive industries which were evolving into large, mass production processes. In sewn products, for example, movable power outlets were needed for sewing machines. As production layouts changed, rearranging of sewing equipment became much easier. Production was no longer delayed, and the end result was increased productivity.

Feedrail® systems have become more and more sophisticated over the years. You'll see them in abusive heavy-duty application such as steel mills and rapid transit systems. In high-tech industries, Feedrail® Electrification Systems are being used to perform testing and burn-in functions at electronic assembly plants.

No matter what your application, we can engineer a system to meet your electrification requirements.

Why are Feedrail® Systems the best?

All Feedrail® Electrification Systems share some important benefits:

1. Heavy duty 13 and 18-gauge zinc coated steel track casings.
2. Fully enclosed hard-drawn copper bus bars which resist overheating and protect personnel.
3. Conductors are easily removed for maintenance and require no special tools.
4. Easy track maintenance with insertable Feedrail® Cleaning Tools.
5. Track insulators and trolley insulator blocks made of high arc resisting material.
6. Horizontally mounted ball bearing guide wheels on trolleys prevent slewing.
7. Quarter turn plug-in jacks which lock into place for easy relocation.
8. System is installed in sections for easy disassembly and reassembly to meet production requirements and easy maintenance.
9. Heavy duty hardware for long lasting performance.
10. Wide range of electrical ratings.
11. U.L. Listed and C.S.A. Certified (where applicable).

We provide a total range of electrical systems from 40-225 amperes, through 600 V.A.C., up to 5 poles to meet your application needs.

Simple design leads to quick installation.

Feedrail® Systems are manufactured of standard units that are factory pre-assembled to save time on the installation site. Our systems install with just a wrench and a screwdriver.

You can add to, modify, change or tailor any of these systems to meet your needs quickly.

Compact design equates to dollar savings.

Our Feedrail® Trolley Busway Systems incorporate all power conductors into one housing minimizing installation costs.

Quality design and construction means superior safety.

Feedrail® Overhead Electrification Systems assure the safety of your personnel and operate dependably at any level from ceiling to floor. Since all current-carrying components are enclosed, the hazard of personnel accidentally coming in contact with live current is eliminated. Feedrail® Electrification Systems are U.L. Listed and C.S.A. Certified where applicable.

National Electrical Code

Feedrail® systems are listed by the Underwriters' Laboratories, Inc. The National Electrical Code governs their installation. The equipment is designed and manufactured for use under this Code and will meet the requirements listed in the Code if installation is in accordance with its provisions. However, interpretation of local inspection authorities should be sought for specific rules in your district.

Minimum maintenance and dependable performance.

Because they're so well constructed, Feedrail® Electrification Systems will deliver years of trouble-free, reliable service. Once installed, your Feedrail® Electrification System is virtually maintenance-free. Periodic inspection and cleaning is all that's required.

Feedrail® … the genuine track to safety.

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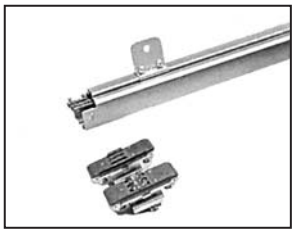
Feedrail®

Product Lines

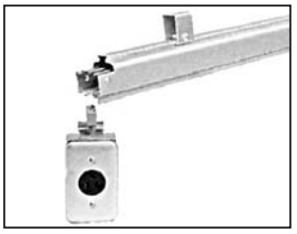
Trolley & Plug-In Overhead Electrification



60A continuous
90A intermittent
2, 3 poles; 300V
Trolleys to 30A
Plug-in jacks to 20A

FRS100 & 200
page 4

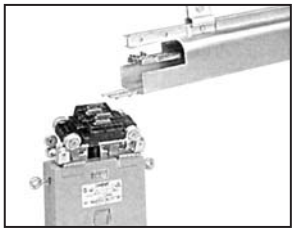
Plug-In Overhead Electrification



40/50A continuous
2, 3, 4 poles; 300V
Plug-in jacks to 20A

FRS300
page 18

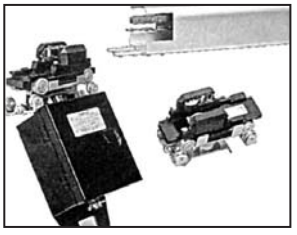
Multi-Conductor Trolley Busway Electrification



60A continuous
90A intermittent
2, 3, 4 poles; 600V
Trolleys to 30A

FM
page 28

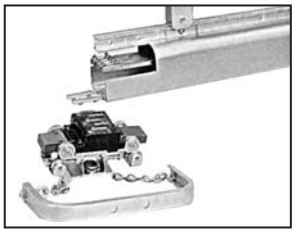
Multi-Conductor Trolley Busway Electrification



60A continuous
90A intermittent
4, 5 poles; 300V
Trolleys to 30A

FX
page 28

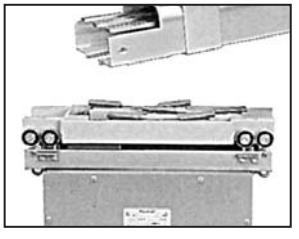
Trolley Busway and Crane & Hoist Electrification



100A continuous
150A intermittent
2, 3 poles; 600V
Trolleys to 100A

FR100
page 49

Heavy Duty Crane & Hoist Electrification



175/225A continuous
250/300A intermittent
2, 3 poles; 600V
Trolleys to 225A

FH
page 76

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Index by Catalog No. - page 99.

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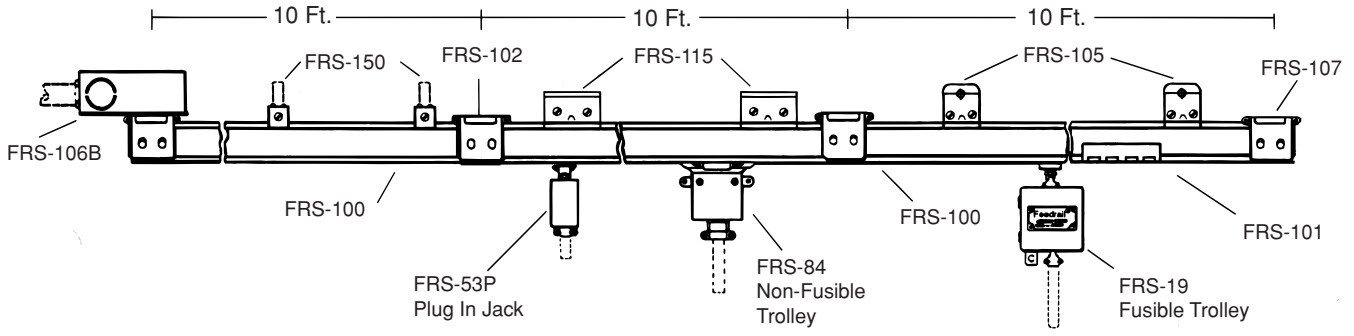
Feedrail®

FRS100 & FRS200 Series (Feedrail® '60') Quick Reference Selection Guide

Overhead Electrification Systems For Movable Trolley or Stationary Plug-In Service

- 60 Amp Continuous
- 90 Amp Intermittent
- 300 Volts AC or DC Max
- 2 & 3 Pole

Typical 30 Ft Straight Track Run



3-Pole Cat. No.	System Component	Qty Shown	Page
FRS-100	Straight Track Section (10 Ft)	2	7
FRS-101	Door Track Section (10 Ft)	1	7
FRS-102	Coupling (Straight to Straight)	2	9
FRS-106B	End Feed w/Junction Box	1	9
FRS-107	Dead End Cap	1	9
FRS-53P	Plug In Jack	1	12
FRS-19	Fusible Trolley	1	11
FRS-84	Non-Fusible Trolley	1	11
FRS-105 or FRS-150 or FRS-115	Hanger Hanger (for Tie Rod) Hanger (Low Level)	2 Per Track Sect. 2 Per Track Sect. 2 Per Track Sect.	10 10 10

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FRS100 & FRS200 Series (Feedrail® '60') – Design & Construction

Current Carrying Capacity

Track rating: 60 amperes (continuous); 90 amperes (intermittent). Trolleys rated 5, 15, 20 or 30 amperes (continuous); Plug-In Jacks rated 15 or 20 amperes (continuous).

Voltage

300 VAC, 300 VDC.

Track

Track sections consist of a one-piece streamlined 18-gauge zinc coated steel housing and the enclosed current carrying bus bars and insulators, all factory assembled in convenient lengths ready for easy, fool-proof installation on the job. No special tools required. The lower horizontal portions of the housing serve as smooth, rigid runways for the trolleys.

FRS100 & FRS200 Series Track sections are available in various types — Straight, Door, Sectionalizing, Transfer and Curved Track sections.

Bus bars are of hard-drawn copper. They are amply proportioned to carry the specified current of 60 amperes per pole continuously, 90 amperes per pole intermittently, without overheating. Bus bar connectors assure full current carrying capacity across the joints without interfering with the free travel of the trolley contacts.

Insulators are made of a high insulating and arc-resistant material. They are locked in place on 9⅝" centers.

Track Supports

Steel clamp type track hangers for supporting track sections from strap or rod. Track may be supported on up to 10' centers at track joints when used with Duplex Track Hangers. Additional track hangers can be attached at intermediate points. **Track should be supported by a minimum of two track hangers per section.**

Trolleys

Trolleys are available in both fusible and non-fusible types.

All Feedrail® 2 and 3 Pole trolleys have a chassis-insulator contact assembly. The chassis is of heavy gauge steel. The trolley wheels and guide wheels are of the ball bearing type. Horizontally mounted ball bearing guide wheels prevent slewing when running in the track. A substantially proportioned insulator block combines the best insulating properties with high arc resistance.

FRS100 & FRS200 Series 2 and 3 Pole trolleys are furnished with three types of contacts COPPER GRAPHITE ROLLER CONTACTS for intermittent movement not in excess of 150 feet per minute; COPPER GRAPHITE BRUSH CONTACTS for movement up to 250 feet per minute; BRONZE BRUSH CONTACTS for stationary service.

A polarizing tab on the chassis operating in conjunction with a stop in the door track section, permits insertion of the trolleys only one way. Equipment grounding may be made through the trolleys. **Weights in excess of 20 pounds per trolley are not recommended for moving applications.**

Plug-In Jacks

Plug-in Jacks are designed for applications where the mobility of trolleys is not required, such as in some sewing rooms or for connecting lighting fixtures and small tools to Feedrail® track. They can be inserted into the track section at any point. A quarter turn after insertion makes electrical contact with the bus bars and locks the jack in place.

Grounding

For the safety of personnel, the track casings of the Feedrail® system may be used as an equipment grounding conductor for grounding equipment through the individual trolleys and plug-in jacks.

Equipment grounding may be made by using the screw on the underside of the trolley chassis or plug-in jacks or on trolleys or jacks having cabinets or boxes by using the grounding screw within the box. Track housing must be grounded through conduit or other suitable means.

FRS100 & FRS200 Series systems are designed for indoor service in essentially dry locations. Feedrail® systems are electrified tracks in which the current carrying components are enclosed in protective steel housings. Smooth riding internally track supported trolleys or plug-in jacks take off current and provide electric power for crane and hoist or other types of electrification systems.

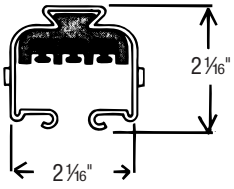
The FRS100 & FRS200 Series systems have been specifically developed to provide safe electrification for sewing machines, cloth cutting machines, cloth laying and inspection machines, silk screen printing and drying machines, monorail hoists, light duty cranes and stackers, book binding machines, portable tools on assembly and production lines, radio, TV and appliance test lines, lights for offices, stores, factories, etc.

The FRS100 & FRS200 Series systems are made up of standardized units, factory assembled for fast, complete installation without on-site fabrications. These 2 and 3 pole systems may be used to provide both power and control. They are ideally suited for use on control circuits where other standard Feedrail® systems supply heavier electrification requirements.

Feedrail® is listed by Underwriter's Laboratories, Inc. (U.L.) under BUSWAYS AND ASSOCIATED FITTINGS (File E11348) and as a CRANE AND HOIST ELECTRIFICATION SYSTEM (File E31188). Feedrail® is also listed by the Canadian Standards Association (C.S.A. under WIREWAYS AND BUSWAYS (File LL-7907).

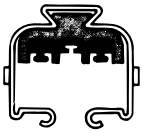
For specific item listing currently in effect consult technical service group.

Bus Bar Arrangement



60 Amp

3 Pole



60 Amp

2 Pole

Center Bus bar is omitted for 2 Pole System

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Feedrail®

FRS100 & FRS200 Series (Feedrail® '60') – Typical Electrical Systems for Various Applications

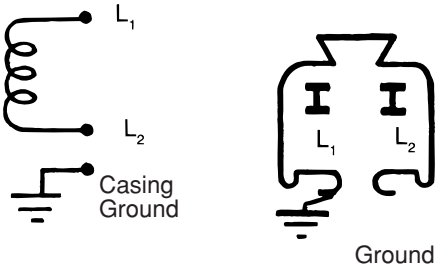
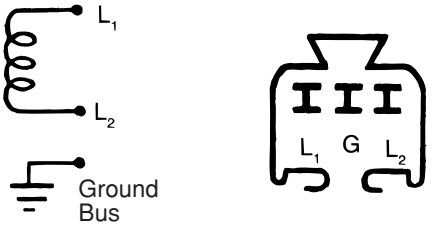
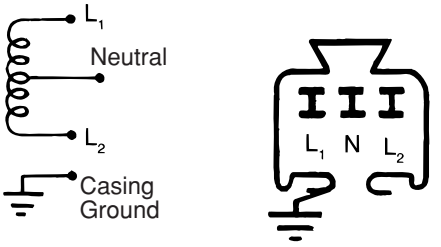
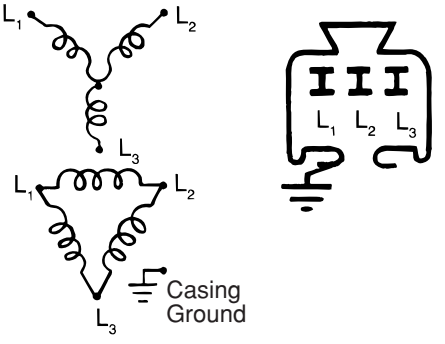
Applications

For Single Phase

- Cutting Machines
- Sewing Machines
- Cloth Laying Machines
- Hot Melt Adhesive Machines
- Heaters
- Portable Tools
- Fans
- Lighting Systems
- Electric Irons

For Three Phase

- Sewing Machines
- Cloth Laying Machines
- Lighting Systems
- Machine Tools
- Heaters

Electrical System	Connections-Grounding
Single Phase **2P, 3W** 110V, 208V, 220V or 277V plus Equipment Ground Wire thru Casing	
Single Phase **2P, 3W** 110V, 208V or 220V With One Bus for Equipment Ground	
Single Phase **3P, 4W** 110V and 220V Equipment Ground Wire thru Casing	
Three Phase **3P, 4W** 208V or 220V Equipment Ground Wire thru Casing	

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Feedrail®

FRS100 & FRS200 Series (Feedrail® '60') – Track Sections

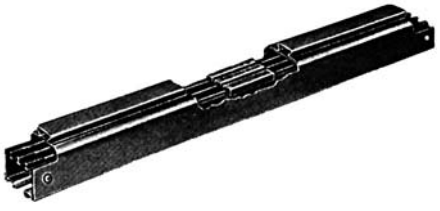
Straight Track

Cat. No.	Bus Bars	Poles	Length	Weight
FRS-200	Yes	2	10'	18 lbs.
FRS-200-5	Yes	2	5'	9 lbs.
FRS-100	Yes	3	10'	20 lbs.
FRS-100-5	Yes	3	5'	10 lbs.
FRS-130	No		10'	15 lbs.
FRS-130-5	No		5'	7½ lbs.

Door Track

Door track sections are identical to straight track except with a hinged door in the bottom for the insertion and removal of trolleys. When closed, the doors are securely locked and accurately aligned with the rest of the track to form an uninterrupted runway for the trolleys. Hinged doors are easy to open or close by pressing pins together against a spring pressure which releases the locking bolts. Door openings are polarized so trolleys cannot be inserted in improper polarity.

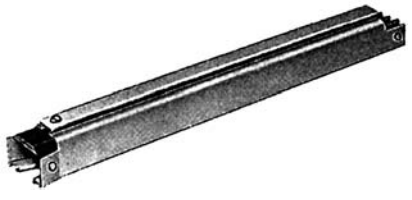
Cat. No.		Poles	Length	Weight
FRS-201	Yes	2	10'	18 lbs.
FRS-201-5	Yes	2	5'	9 lbs.
FRS-101	Yes	3	10'	20 lbs.
FRS-101-5	Yes	3	5'	10 lbs.
FRS-131	No		10'	15 lbs.
FRS-131-5	No		5'	7½ lbs.



Sectionalizing Track

Sectionalizing track sections isolate portions of a track run. They are the same as straight track sections except near the center of the track each bus bar is interrupted by an air gap. The bus bars are so formed and positioned by a special insulator that all trolleys smoothly cross the air gap while maintaining electrical continuity. The circuits on both sides of the gap are momentarily tied together through the trolley contacts as the trolley passes the air gap. Sectionalizing insulators should not be used to "make" or "break" current to trolley contacts.

Cat. No.	Poles	Length	Weight
FRS-245	2	10'	18 lbs.
FRS-245-5	2	5'	9 lbs.
FRS-145	3	10'	20 lbs.
FRS-145-5	3	5'	10 lbs.



Transfer Track

Transfer track sections are similar to straight track sections except that one or two ends are flared for use at points of transfer on slide switches, turn-tables, etc. A nose insulator at the transfer point serves as a guide for the proper entrance of the trolley. Trolleys should not be inserted or withdrawn thru this section. Curved transfer sections with one or both ends flared, with or without doors, and with feed-in boxes installed can be furnished on special order.

Cat. No.	Bus Bars	Poles	Length	Weight
FRS-225	Yes	2	10'	18 lbs.
FRS-225-5	Yes	2	5'	9 lbs.
FRS-125	Yes	3	10'	20 lbs.
FRS-125-5	Yes	3	5'	10 lbs.
FRS-132	No		10'	15 lbs.
FRS-132-5	No		5'	7½ lbs.

NOTES:

- 10' and 5' are standard lengths. Other lengths furnished on special order.

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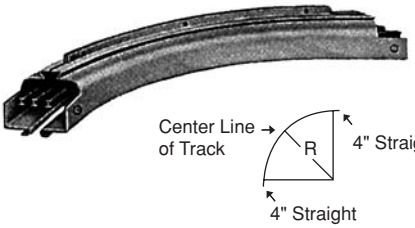
Feedrail®

FRS100 & FRS200 Series (Feedrail® '60') – Track Sections



Curved Track

Curved track sections are of the same specifications as straight track. All standard curved track sections are full 90° curves and have an additional 4" of straight track on each end for coupling. Special sections with different degree of arc and radius from those listed below can be furnished to order. **Minimum radius, 2'6".** Maximum overall length per single curved section is 12'6".

Cat. No.	Poles	Length	Weight
FRS-212	2	2'6"	11 lbs.
FRS-218	2	3'	13 lbs.
FRS-213	2	3'6"	15 lbs.
FRS-219	2	4'	17 lbs.
FRS-214	2	4'6"	19 lbs.
FRS-220	2	5'	21 lbs.
FRS-221	2	5'6"	23 lbs.
FRS-222	2	6'	25 lbs.
FRS-223	2	6'6"	27 lbs.
FRS-112	3	2'6"	12 lbs.
FRS-118	3	3'	14 lbs.
FRS-113	3	3'6"	16 lbs.
FRS-119	3	4'	18 lbs.
FRS-114	3	4'6"	20 lbs.
FRS-120	3	5'	22 lbs.
FRS-121	3	5'6"	24 lbs.
FRS-122	3	6'	26 lbs.
FRS-123	3	6'6"	28 lbs.

NOTE:

- Three curved hangers are furnished with each curved track section. Mounting holes are similar to FRS-105.

Expansion Track

Expansion track is available for use where it is necessary to compensate for the difference in total expansion or contraction between steel track housings and copper bus bars. These sections must be used on installations that run across a building or structural expansion joint where movement of the structure can cause stresses on the Feedrail® through the Feedrail® supports. These sections are designed and constructed per customer specifications.

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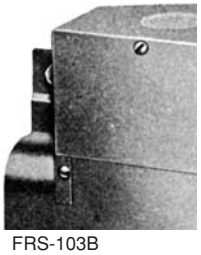
FRS100 & FRS200 Series (Feedrail® '60') – Track Accessories

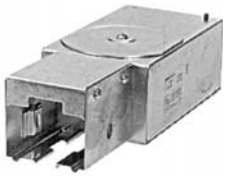
FRS-102

FRS-107



FRS-103B

FRS-106B



FRS-149

FRS-111

FRS-28

FRS-77

Standard Track Accessories

Cat. No.	Product	Wt.	Description
FRS-102	Coupling (Straight to Straight)	⅜ lb.	Side plates with cover for coupling adjacent straight track sections. (Provided with Bus Bar Connectors). One coupling is required for every two sections of track joined.
FRS-107	Dead End Cap	½ lb.	For closing the end of a straight track run. Similar to coupling FRS-102 with the addition of removable end insulator, end plate and bumper.
FRS-103B	Center Feed w/Junction Box	¾ lb.	For electrical connection to the power supply between adjoining straight track sections. Also serves as a track coupling. Replacement Junction Box sold separately, order Cat.No. FRS-110.
FRS-103	Center Feed		
FRS-106B	End Feed w/ Junction Box	⅞ lb.	For electrical connection to the power supply and closing the end of a straight track run. Similar to FRS-103B with the addition of a removable end insulator, end plate and bumper. Replacement Junction Box sold separately, order Cat. No. FRS-110.
FRS-106	End Feed		
FRS-149	Low Level End Feed	2½ lbs.	For electrical connection to the power supply and closing the end of a straight track run where insufficient head room exists for use of the FRS-106B end feed. Junction Box knockouts for 1¼" conduit.
FRS-111	Fixture Hanger For Lights	⅛ lb.	Used in track slot as an auxiliary support for lighting fixtures. Hole size is 7⁄16".

Curved Track Accessories

Cat. No.	Product	Description
FRS-116	Coupling Set	Curved to Straight Track
FRS-117	Coupling Set	Curved Track to Curved Track
FRS-140	Dead End Cap	For Closing End of a Curved Track Section
FRS-137	Center Feed Set	For electrical connection to the power supply between two curved track sections
FRS-139	End Feed Set	For electrical connection to the power supply and closing the end of the curved track section
FRS-138	Center Feed Set	For electrical connection to the power supply between a curved track section and a straight track section

Track Cleaning Tools

Cat. No.	Product	Wt.	Description
FRS-28	Dust Remover with Bristle Brushes	.75 lbs.	These special trolley-mounted Dust Remover and Bus Bar Cleaners are quickly and easily used to keep FRS100 & FRS200 Series, 2 & 3 pole systems in prime working condition. They are inserted through the door track section, with the power off, and simply pulled back and forth along the length of a track, cleaning all bus bars at the same time. Their frequency of use will depend upon the severity of foreign matter accumulations. Avoid excessive use.
FRS-77	Bus Bar Cleaners with Cleaning Stones	.75 lbs.	

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Feedrail®

FRS100 & FRS200 Series (Feedrail® '60') – Track Hangers

FRS-150

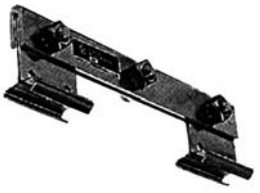
FRS-105

FR-105

Standard Track Hangers

Cat. No.	Product	Wt.	Description
FRS-150	Track Hanger* For tie rod installations Quantity of 2	⅛ lb.	Allows direct attachment of ⅜" tie rods at any point between track joints. Permits easy leveling of track sections. When used with curved track, field notching of track top flange is required for clearance of clamping bolt.
FRS-105	Track Hanger* For strap hanging applications	¼ lb.	For mounting straight track sections. Mounting hole will take ⅜" diameter bolt. They can be attached to straight track at any point between track joints. Not suitable for curved track sections.
FR-105	Clevis Support* For tie rod installations	⅛ lb.	Malleable iron, with ⅜" cross bolt and ⅜"—16 tapped hole for tie rod. Must be used in conjunction with FRS-105 track hanger.

FRS-108



FRS-124

Track Hangers for Special Applications

Cat. No.	Product	Wt.	Description
FRS-108	Track Hanger* For Messenger Cable	½ lb.	Used in place of track hanger, FRS-105 where structural supports are not available. Takes ⅜" diameter messenger cable. They can be attached to straight track at any point between track joints. Not suitable for curved track.
FRS-124	Duplex Track Hanger	1⅛ lbs.	For 10' support spacing to be used at track joint over coupling.
FRS-115	Track Hanger*	¼ lb.	Used in place of track hanger, FRS-105 where head room is limited. Takes ⅜" diameter bolts. Can be attached to straight track at any point between track joints. Not suitable for curved track.

*Minimum of two track hangers required for each straight track section.

FRS-115

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Feedrail®

FRS100 & FRS200 Series (Feedrail® '60') – Trolleys

Standard Type Trolleys

FRS-6

FRS-13

FRS-84

FRS-19

Non-Fusible with Cable Clamp

Cat. No.	Amps	Poles	Volts	Type of Contact
FRS-32	5	2	300 AC/DC	Copper Graphite Roller
FRS-12	5	3	300 AC/DC	Copper Graphite Roller
FRS-22	15	2	300 AC/DC	Bronze Brush
FRS-26	15	2	300 AC/DC	Copper Graphite Brush
FRS-2	15	3	300 AC/DC	Bronze Brush
FRS-6	15	3	300 AC/DC	Copper Graphite Brush

Non-Fusible with Cable Clamp and Tool Hanger

Cat. No.	Amps	Poles	Volts	Type of Contact
FRS-33	5	2	300 AC/DC	Copper Graphite Roller
FRS-13	5	3	300 AC/DC	Copper Graphite Roller
FRS-23	15	2	300 AC/DC	Bronze Brush
FRS-27	15	2	300 AC/DC	Copper Graphite Brush
FRS-3	15	3	300 AC/DC	Bronze Brush
FRS-7	15	3	300 AC/DC	Copper Graphite Brush

Non-Fusible with Box and Cable Clamp

Cat. No.	Amps	Poles	Volts	Type of Contact
FRS-94	20	2	300 AC/DC	Copper Graphite Brush
FRS-84	20	3	300 AC/DC	Copper Graphite Brush
FRS-15	30	2	300 AC/DC	Copper Graphite Brush
FRS-5	30	3	300 AC/DC	Copper Graphite Brush

Fusible with Cabinet, Fuse Block and Cable Clamp*

Cat. No.	Amps	Poles	Volts	Type of Contact
FRS-39	5	2	250 AC/DC	Copper Graphite Roller
FRS-19	5	3	250 AC/DC	Copper Graphite Roller
FRS-29	15	2	250 AC/DC	Bronze Brush
FRS-30	15	2	250 AC/DC	Copper Graphite Brush
FRS-9	15	3	250 AC/DC	Bronze Brush
FRS-10	15	3	250 AC/DC	Copper Graphite Brush
FRS-96	20	2	250 AC/DC	Copper Graphite Brush
FRS-86	20	3	250 AC/DC	Copper Graphite Brush
FRS-18	30	2	250 AC/DC	Copper Graphite Brush
FRS-8	30	3	250 AC/DC	Copper Graphite Brush

*Fusible Trolleys take 9/16" x 2" cartridge fuses. (Supplied by others.)

NOTES:

- 2 pole trolleys have center pole omitted. For other configurations, consult technical service group.
- 5 and 15 amp trolleys not recommended for use on curve track less than 4' radius.

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Feedrail®

FRS100 & FRS200 Series (Feedrail® '60') – Trolleys and Plug-In Jacks

Transfer Type Trolleys

FRS-74

FRS-73

FRS-45P

FRS-53P

FRS-41P

FRS-61P

FRS-42P

Non-Fusible w/Box and Cable Clamp

Cat. No.	Amps	Poles	Volts	Type of Contact
FRS-64	20	2	300 AC/DC	Copper Graphite Brush
FRS-74	20	3	300 AC/DC	Copper Graphite Brush
FRS-55	30	2	300 AC/DC	Copper Graphite Brush
FRS-35	30	3	300 AC/DC	Copper Graphite Brush

Fusible w/Cabinet, Fuse Block and Cable Clamp*

Cat. No.	Amps	Poles	Volts	Type of Contact
FRS-63	20	2	250 AC/DC	Copper Graphite Brush
FRS-73	20	3	250 AC/DC	Copper Graphite Brush
FRS-56	30	2	250 AC/DC	Copper Graphite Brush
FRS-36	30	3	250 AC/DC	Copper Graphite Brush

Plug-In Jacks

Cat. No.	Amps	Poles	Volts	Description
FRS-40P	15	2	300 VAC, 125 VDC	Non-Fusible Standard 6" Leads
FRS-45P	15	3	300 VAC	Non-Fusible Standard 6" Leads
FRS-43P	15	2	300 VAC, 125 VDC	Non-Fusible w/Box & Cable Clamp
FRS-53P	15	3	300 VAC	Non-Fusible w/Box & Cable Clamp
FRS-41P	15	2	125 VAC, 125 VDC	Non-Fusible w/Box and NEMA Type 5-15R Receptacle
FRS-51P*	15	2	250 VAC, 125 VDC	Fusible w/Cabinet and Fuse Block
FRS-61P*	15	3	250 VAC	Fusible w/Cabinet and Fuse Block
FRS-42P*	15	2	125 VAC, 125 VDC	Fusible w/Cabinet, Fuse Block and NEMA Type 5-15R Receptacle
FRS-40P2	20	2	300VAC, 125VOC	Non-Fusible Standard 6" Leads
FRS-45P2	20	3	300VAC	Non-Fusible Standard 6" Leads
FRS-43P2	20	2	300VAC, 125VOC	Non-Fusible w/Box & Cable Clamp
FRS-53P2	20	3	300VAC	Non-Fusible w/Box & Cable Clamp
FRS-41P2	20	3	125VAC, 125VDC	Non-Fusible w/Box & NEMA Type 5-20R Receptacle
FRS-51P2*	20	2	250VAC, 125VDC	Fusible w/Cabinet & Fuse Block
FRS-61P2*	20	3	250VAC	Fusible w/Cabinet & Fuse Block
FRS-42P2*	20	2	125VAC, 125VDC	Fusible w/Cabinet & Fuse Block & NEMA Type 5-20R Receptacle

*Fusible Trolleys and Plug-In Jacks take 9/16" x 2" cartridge fuses. (Supplied by others)

NOTES:

- 2 pole trolleys and plug-in jacks have center pole omitted. For other configurations, consult technical service.
- 15 Amp Fusible Plug-In Jack available for ease of replacement of fuses without the removal of the cover. Consult technical service group.

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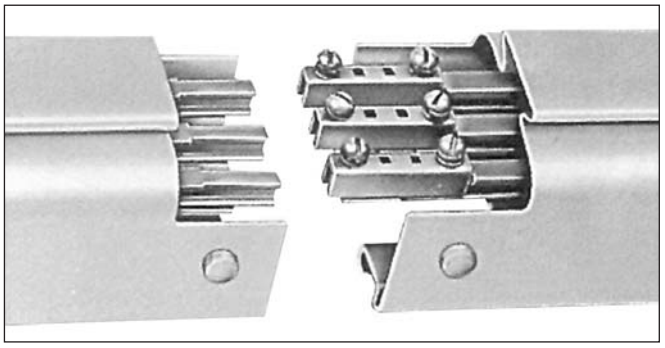
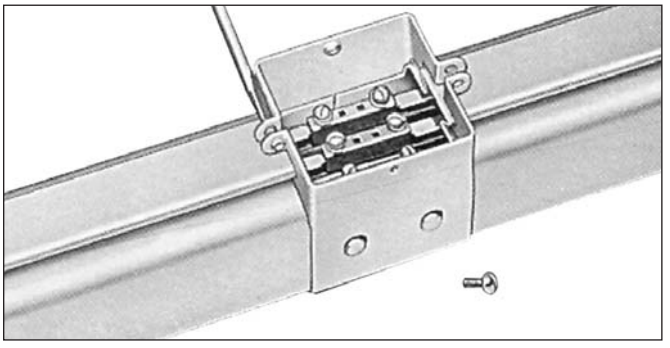
FRS100 & FRS200 Series (Feedrail® '60') – Installation Procedure

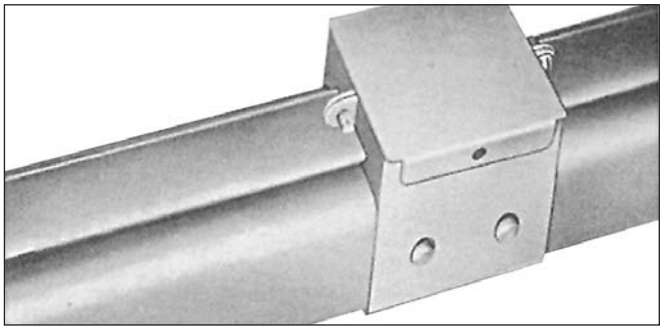
Joining Straight to Straight Sections with Coupling Plate (Cat. No. FRS-102)



1. Place sections end to end so that ends with and without connectors are facing. Loosen set screws in unattached ends of bus bar connectors to clear openings. Bring track sections together, aligning ends of bars in section being installed with end of the track casing, shifting bus bars slightly if necessary. (Up 1/32" to gap may be left in bus bar joint to permit this alignment.) Bus bar connectors should be center in the casing cutout of the two track sections. Tighten connector set screws.



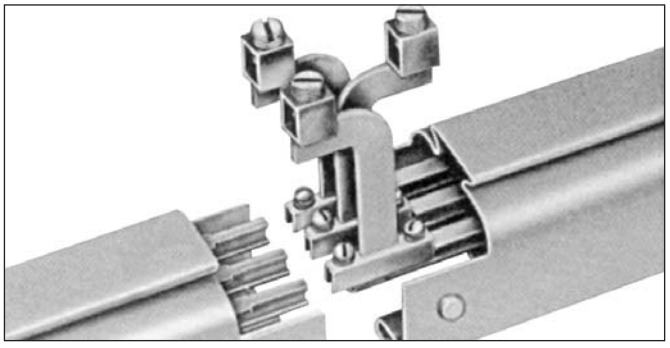
2. Hook bottoms of side plates of coupling into underside of track housings and swing up into position so that holes engage studs on sides of housing. Insert clamping screws as shown and screw in tightly. The two track sections are now securely coupled together permitting an uninterrupted path for the trolley travel.



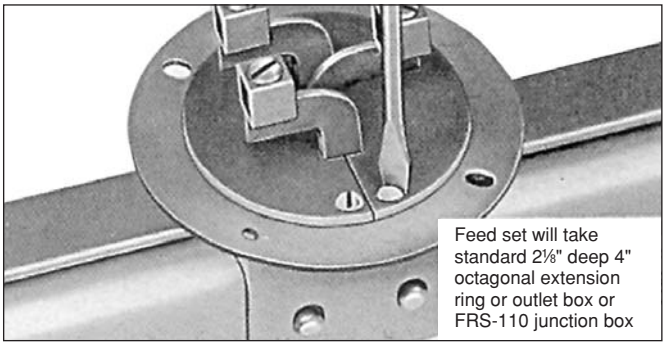
3. Place coupling cover in position on top of coupling plates. Insert the two fastening screws and the coupling is complete.

NOTE: Bus Bar Connectors shown above are not provided with track section. Order Catalog No. FRS-102.

Mounting Center Feed Box (Cat. No. FRS-103)



1. Replace plain copper bus bar connectors in one track section with terminal connectors of center feed. Place sections end to end so ends with and without connectors are facing. Loosen screws in unattached ends of terminal connectors to clear openings. Slide bus bars into connectors (Up to 1/32" gap may be left in bus bar joint.) Tighten connector set screws.



2. Hook bottoms of side plates of center feed into underside of track housings and swing up into position so that holes engage studs on sides of housing. Mount steel cover on side plates with two fastening screws. Place the two feed terminal spacers around feed-in terminals and fasten by four holding screws.

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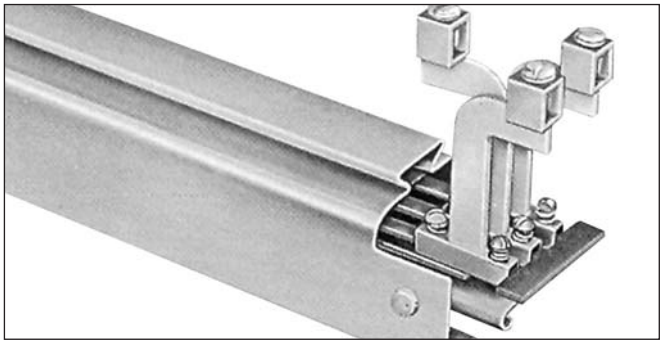
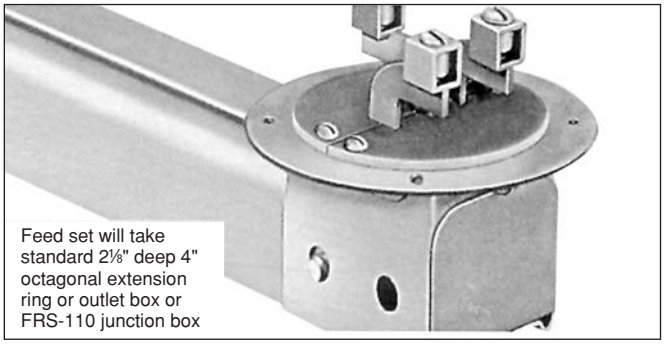
Feedrail®

FRS100 & FRS200 Series (Feedrail® '60') – Installation Procedure

Mounting End Feed Box (Cat. No. FRS-106)

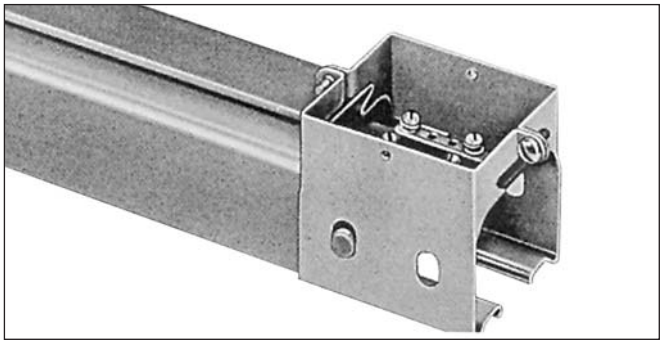


1. Slip terminal connectors of end feed on to ends of bus bars and tighten screws. Attach end insulator to terminal connectors.

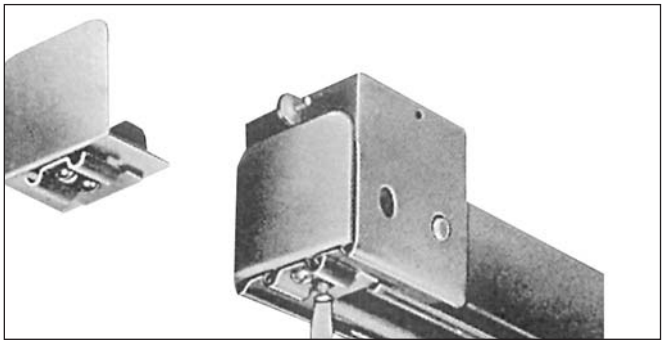


2. Mount side plates and end plate-bumper assembly. Mount cover on side plates with two fastening screws. Place the two feed terminal spacers around feed-in terminals and fasten by four holding screws.

Mounting Dead End Cap (Cat. No. FRS-107)

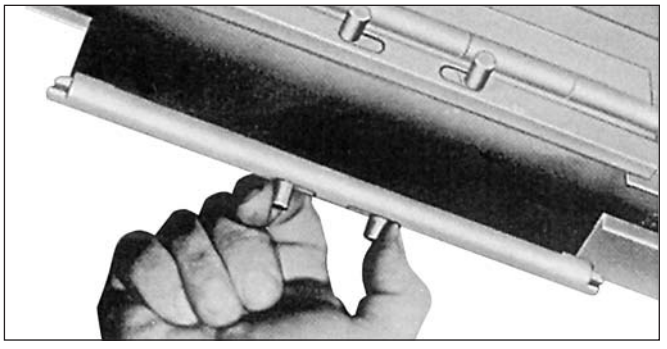


1. Mount end insulator by inserting prongs into ends of bus bar connectors as far as they will go and tighten set screws. Hook on dead end cap side plates so that holes engage studs on track housing. Bring plates together as shown. Insert and fasten clamping screws.

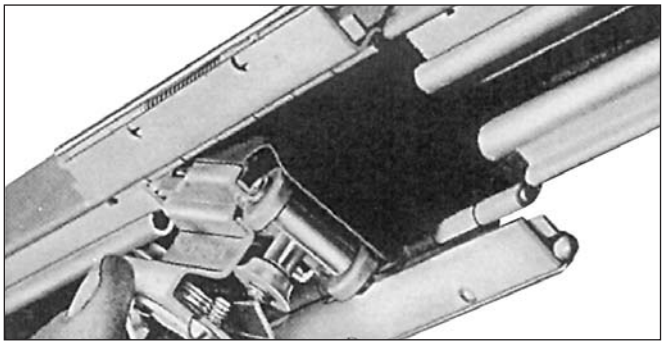


2. Loosen clip on end plate-bumper assembly sufficiently to permit sliding into position as shown. Tighten screws. Place dead end cover in position. Insert the two fastening screws and tighten.

Installation Of Trolleys



1. Press pins together on underside of door section and swing door open.



2. Insert trolley as shown. If trolley hits polarizing strip, remove, reverse 180° and reinsert. Close track doors.

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FRS100 & FRS 200 Series (Feedrail® '60') – Installation Planning and Preventative Maintenance

Installation Planning

Before a Feedrail system can be planned or an estimate of the cost prepared, the electrical and mechanical requirements that the system must meet should be known. The following outlines list the basic data needed for all applications and the additional data required for various specific applications.

Basic For All

1. Describe in detail the purpose for which the Feedrail system will be used. Will it be used with existing equipment?
2. How many conductors will be required?
3. What voltage and current is to be applied to each conductor? Where is the power source located?
4. Details about any special requirements or conditions which the installation must meet such as moisture, corrosive fumes, high or low temperatures, etc.

For Electric Cranes

5. Sketch giving number, location, length of crane runways and length of bridge. Show location of building expansion joints or expansion joints in the structure from which the Feedrail will be supported.
6. How many conductors will be required on each bridge run? How many for power? For control? How much current must each conductor carry?
7. What is the maximum travel speed of the bridge? of the hoist?
8. List of the crane's motors — main hoist, auxiliary hoist, bridge travel, trolley travel— giving the type (D.C., wound rotor, squirrel cage, etc.) of each motor and its horsepower and full-load ampere rating.

For Electric Hoists

5. Plan view sketch of the rail system on which the hoists will travel, giving the length of run, of straight sections, radii of any curves and dimensions of any switches. What is the minimum distance from Feedrail to monorail in order to clear hoist? Show location of building expansion joints or expansion joints in the structure from which the Feedrail will be supported.
6. How many hoists will be used and what is the horsepower and full load current rating of each? Include horsepower and full load current rating of travel motors of any of the hoists that are motor propelled. What are the maximum travel speeds?

For Moving Test Lines

5. Plan view sketch with dimensions showing the length of straight sections and radii of any curves, indicate the number of outlets required. If there are any sections along the run where test current will not be required, indicate their location and extent.
6. What type of equipment will be tested.
7. Give weight of units to be supported by the system.
8. What amperage range and what fusing arrangements will be required.?

For Production Machines

5. Plan view sketch with dimensions showing the location of the Feedrail system.
6. Indicate the number of conductors required and give voltage and amperage requirements of each. Give horsepower and full load current rating of each motor.
7. List any other equipment that will be powered by the Feedrail and give its full load current rating.

For Special Requirements

5. Plan view sketch with all dimensions which are necessary to make clear the location and extent of the Feedrail system, and the radii of any curves it may contain. Show the location of the power source.
6. Full details about equipment which will be operated from the system, including

(a) Horsepower and full-load current rating of any electrical motors

(b) Weight of any equipment to be supported by the system.

(c) Fusing arrangements required.

(d) Number of outlets needed.

Engineering Cooperation

Working out the details of a Feedrail system installation is not difficult once all the electrical and mechanical requirements have been definitely determined. We should like to suggest, however, that considerable time can be saved by enlisting the cooperation of Feedrail engineers from the start. They have helped work out the details of hundreds of installations and consequently have at their fingertips the answers to the questions and problems usually involved. Their cooperation is offered without obligation. Just ask the nearest representative to call — or send us complete information as outlined above with a request for recommendations.

Preventative Maintenance

At all times Feedrail equipment should be so protected and maintained as to be kept clean and dry.

Before the Feedrail system is placed in operation, it should be thoroughly checked for horizontal and vertical alignment, adequate track support and free movement of trolley travel throughout the entire track run. All track, bus bar and feed connections should be mechanically tight. The system should be checked for possible grounds or short circuits. Any paint, grease, or other foreign matter accumulated during construction should be removed from the bus bars, insulation and track interior. Blow out all dust and other loose particles from inside the track.

Expansion sections, when used, must be properly adjusted, located and supported in accordance with installation instructions. Check bus bars and casing for accurate alignment.

Feedrail is both an electrical and a moving mechanical system and therefore should be included as a part of your Preventive Maintenance Program.

Electrical Maintenance requires (1) keeping the system dry and clean to prevent electrical leakage or "shorts" across the insulation, and (2) maintaining electrical continuity by keeping bus bar contact surfaces clean and joints tight.

Mechanical Maintenance requires (1) preventing excessive wear and (2) replacing parts showing excessive wear.

The following Preventive Maintenance procedure, periodically performed, is recommended:

(a) Remove, thoroughly clean all trolleys and lubricate the wheels. Inspect contacts for excessive wear. Replace worn wheels and contacts.

(b) Clean bus bars with Feedrail Bus Bar Cleaner.

(c) Blow out all foreign particles which have accumulated inside the track.

(d) Check trolleys for free movement within the track.

(e) Check all track supports, track joints, bus bar and feed connections for tightness.

This procedure should be repeated at regular intervals, consistent with the severity of the operations and usage of the system. Plants operating two or three shifts will require more frequent inspection of the Feedrail® equipment.

Feedrail® is not normally recommended for installations subject to vibration, frequent electrical overload, corrosive fumes and other abnormal conditions. However, should such conditions exist, more frequent inspections and maintenance will be required.

Before additional electrical loads are added to the system, it should be determined that sufficient capacity is available.

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Feedrail®

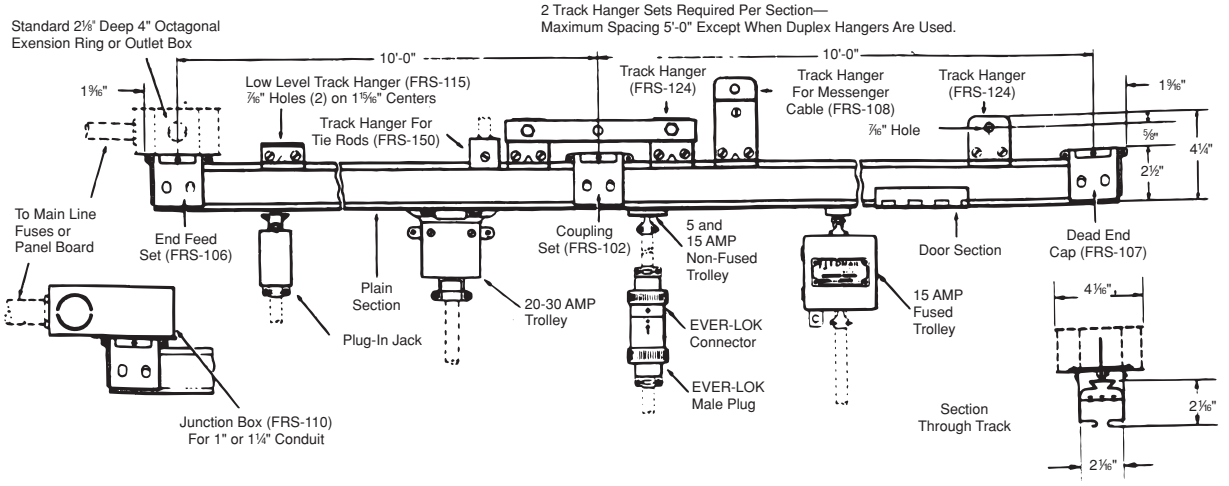
FRS100 & FRS200 Series (Feedrail® '60') – Basic Dimensions/Mounting Methods

Basic Dimensions

As an aid in planning mountings, the basic dimensions of the Feedrail '60' system is shown below. These are offered as a guide only. For detailed or certified drawings, consult technical service group.

Mounting Methods

Examples of the methods commonly used for mounting the Feedrail '60' system is shown below. These methods can be used in existing plants as well as in new buildings. Engineers and contractors will readily be able to devise other methods to suit special installations. In every case the mounting should be designed to insure a rigid installation in both horizontal and vertical alignment.



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Feedrail®

FRS100 & FRS200 Series (Feedrail® '60') – Typical Specification

As an aid to preparing specifications for a Feedrail® installation, the following wording is suggested. You will note this specification contains the primary electrical and mechanical features of the Genuine Feedrail® System.

FRS100 & 200 SERIES (Feedrail® '60')

The Trolley and Plug-in Busway System (Crane and Hoist Electrification System) shall be of the metal enclosed type with internally track-supported trolleys and plug-in jacks as manufactured by:

Genuine Feedrail®
Thomas & Betts Corp.
Industrial Products

The System shall have a voltage rating 300 Volts A.C. or D.C. (2 Pole) (3 Pole) and a continuous current carrying capacity of 60 Amperes per Pole. (When used as a Crane and Hoist Electrification System, the System shall be rated at 60 Amperes continuous service and 90 Amperes intermittent service). The full current carrying capacity of the system shall be maintained throughout. The system shall permit longitudinal movement of the housings and bus bars, independent of each other, in order to allow for unequal expansion and contraction as a result of temperature changes.

The System shall consist of standardized, interchangeable, Feedrail units — track sections, coupling sets, dead end caps, track hangers and power takeoff trolleys and jacks, as called for on the plans.

Track sections shall be one piece, 18 gauge, rolled, zinc-coated sheet steel enclosures having a continuous slot in the bottom and a heavy keystone shaped rib in the top. Rolled or drawn copper bus bars, capable of carrying 60 Amperes per pole continuously without overheating, shall be mounted within the steel enclosure on arc-resistant insulators.

Door track sections shall include two hinged doors in the bottom for insertion and removal of trolleys. Door openings shall have a mechanical polarization to insure proper polarity of the trolleys.

Track supported trolleys shall be Cat. No._____ as listed in the Feedrail Catalog. They shall have a zinc-plated sheet steel chassis with metal wheels for support. Horizontal guide wheels shall run in the slot of the Feedrail track to prevent slewing and maintain alignment.

Springloaded roller (or brush) contacts shall be mounted on arc-resistant insulation. When inserted in the Feedrail track, the contacts shall align with the bus bars at all times.

Trolleys shall be mechanically polarized with respect to door track sections.

A plastic strip bumper guard shall be incorporated in the track housing to insure proper insertion of the polarized Plug-In Jack.

When inserted the Plug-In Jack is automatically grounded to the track system for safe operation.

Track supported Plug-In Jacks shall be Cat.No._____ as listed in the Feedrail Catalog.

The Jack shall have spring-loaded contacts for direct, positive contact with the bus bars.

Plug-In Jacks can be inserted in the track slot at any point. A quarter turn, after insertion, makes electrical contact and locks the Jack in place.

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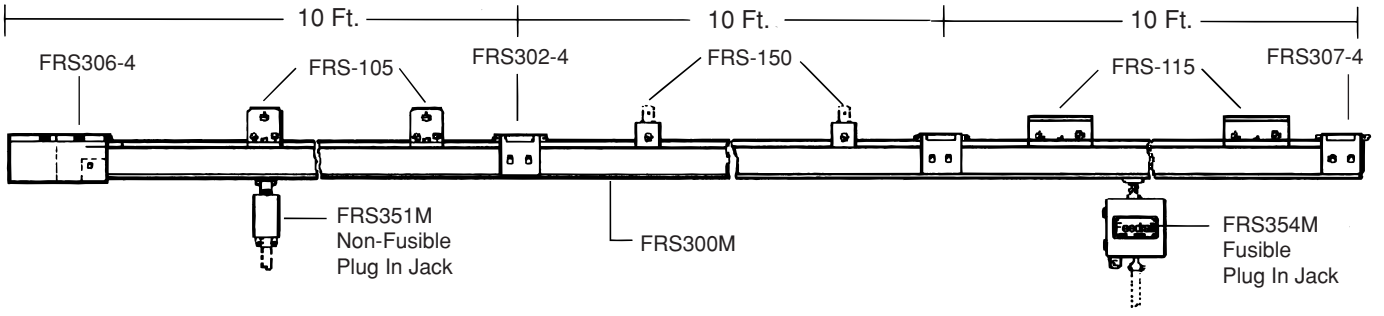
Feedrail®

FRS300 Series (Plug-In Service) – Quick Reference Selection Guide

Overhead Electrification Systems For Stationary Plug-In Service

- 40 Amp, 3 & 4 Pole
- 50 Amp, 2 Pole
- 300 Volts AC Max

Typical 30 Ft. Straight Run of Track



4-Pole Cat. No.		System Component	Qty Shown	Page
FRS300M		Straight Track Section	3	21
FRS302-4		Coupling	2	22
FRS306-4		End Feed	1	22
FRS307-4		End Cap	1	22
FRS351M		Non-Fusible Plug-In Jack	1	23
FRS354M		Fusible Plug-In Jack	1	23
FRS-105		Hanger	2 Per Track Sect.	22
or				
FRS-115		Hanger (Low Level)	2 Per Track Sect.	22
or				
FRS-150		Hanger (for Tie Rod)	2 Per Track Sect.	22

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Feedrail®

FRS300 Series (Plug-In Service) - Design and Construction

Current Carrying Capacity

Track Rating 40 Amps (Continuous)*

Plug-In Jack rated 15 or 20 amperes (continuous)

Voltage —
300 VAC Max

Track

Track sections consist of a one-piece streamlined 18-gauge zinc coated steel housing and the enclosed current carrying bus bars and insulators, all factory assembled in convenient lengths ready for easy fool-proof installation on the job.

Bus bars are of hard-drawn copper. They are amply proportioned to carry the specified current of 40 amperes per pole continuously, without overheating. Bus bar connectors assure full current carrying capacity across the joints. Insulators are made of a high insulating and arc-resistant material. They are locked in place on 9⅝" centers.

A plastic polarization strip is incorporated in the track housing to insure proper insertion of the polarized Plug-In Jack. When inserted, the Plug-In Jack is automatically grounded to the track system for safe operation.

Track Supports

Steel clamp type track hangers for supporting track sections from strap or rod. Track should be supported by a minimum of two track hangers per section. Track may also be supported on 10' centers at track joints when used with Duplex Track Hangers.

Plug-In Jacks

Plug-In Jacks are available for 2, 3 and 4-pole systems. Plug-In Jacks are available with a galvanized steel outlet box with clamp for fast, easy wiring. The Jack has spring-loaded brass contacts for direct, positive contact with the bus bars.

Plug-In Jacks can be inserted into the track slot at any point. A quarter turn, after insertion, makes electrical contact and locks the Jack in place.

Grounding

For the safety of personnel, the track casings of the Feedrail® system may be used as an equipment grounding conductor for grounding equipment through the individual Plug-In Jacks.

Equipment grounding may be made by using the screw on the underside of the Plug-In Jacks or on Jacks having cabinets or boxes by using the grounding screw within the box. Track housing must be grounded through conduit or other suitable means.

Feedrail® FRS 300 Series systems are designed for indoor service in essentially dry locations. Feedrail® systems are electrified tracks in which the current carrying components are enclosed in protective steel housings. Plug-In Jacks take off current anywhere along the length of the system and supply a stationary source of electric power. Feedrail® FRS300 Series systems have been specifically developed to provide safe electrification for assembly or production lines, lighting, and sewing trade applications.

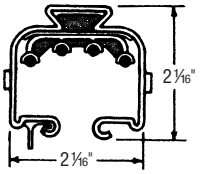
The Feedrail® FRS300 Series systems are made up of standardized units, factory assembled for fast, complete installation without on-site fabrications.

Feedrail® is listed by Underwriter's Laboratories, Inc. (U.L.) under BUSWAYS AND ASSOCIATED FITTINGS (File E11348).

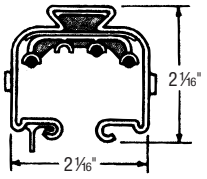
For specific item listing currently in effect consult technical service group.

Bus Bar Arrangement

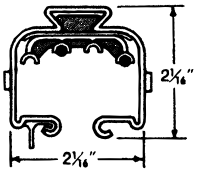
40 Amp
4 Pole
300 Volt



40 Amp
3 Pole
300 Volt



50 Amp*
2 Pole
300 Volt



Notes:

Other bus bar configurations are available on special order. The standard systems shown are preferred for electrical noninterchangeability of track and Plug-In Jacks.

***Two pole track sections rated 50 amperes.**

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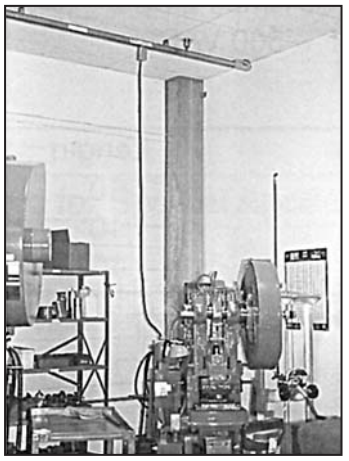
Feedrail®

FRS300 Series (Plug-In Service) – Typical Electrical Systems for Various Applications



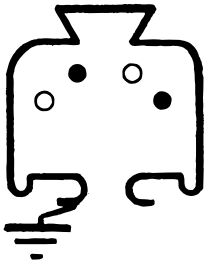
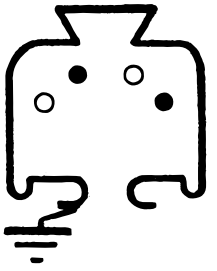
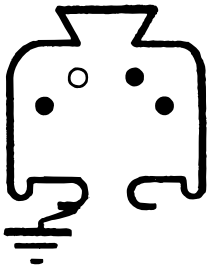
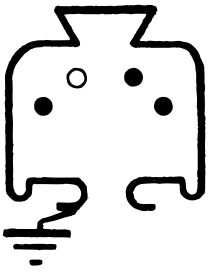
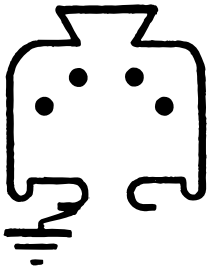
Applications

For Single Phase

- Sewing Machines
- Cloth Laying Machines
- Hot Melt Adhesive Machines
- Lights
- Fans
- Lighting Systems
- Tools
- Electric Irons
- Heaters

For Three Phase

- Sewing Machines
- Cloth Laying Machines
- Lighting Systems
- Machine Tools
- Heaters

Electrical System	Connections-Grounding
Single Phase **2P, 3W** 120V Equipment Ground Wire thru Casing	
Single Phase **2P, 3W** 208/220V Equipment Ground Wire thru Casing	
Single Phase **3P, 4W** 208/220V Equipment Ground Wire thru Casing	
Three Phase **3P, 4W** 208V or 220V Equipment Ground Wire thru Casing	
Three Phase **4P, 5W** 120/208V or 120-277V with use of 2 neutral conductors Equipment Ground Wire thru Casing	

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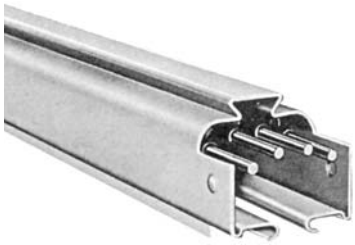
Feedrail®

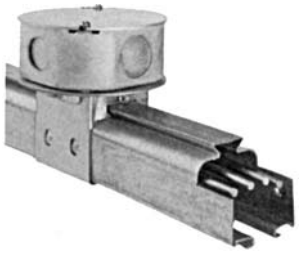
FRS300 Series (Plug-In Service) – Track Sections



Continuous Rating:
40 Amperes 3 & 4 Pole
50 Amps 2 Pole
300 VAC

Straight Track

Cat. No.	Poles	Length	Weight
FRS300C-10	2	10'	18 lbs.
FRS300C-5	2	5'	9 lbs.
FRS300L-10	3	10'	20 lbs.
FRS300L-5	3	5'	10 lbs.
FRS300M-10	4	10'	22 lbs.
FRS300M-5	4	5'	11 lbs.



Continuous Rating:
40 Amperes 3 & 4 Pole
50 Amps 2 Pole
300 VAC

Straight Track with Built-in Center Feed

Supplied with feed box built-in, through which electrical connections to the power supply can be made. Has concentric knockouts for 1" and 1¼" conduit. Terminals accommodate No. 14 to No. 6 standard wire.

Cat. No.	Poles	Length	Weight
FRS303C	2	10'	20 lbs.
FRS303L	3	10'	22 lbs.
FRS303M	4	10'	24 lbs.

NOTES:

- Track shipped with Polarization Strip and Slot Enclosure. See Replacement Parts section.
- 10' and 5' are standard lengths. Other lengths furnished on special order.

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Feedrail®

FRS300 Series (Plug-In Service) – Track Accessories

FRS302-4

FRS306-4

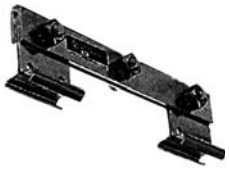
FRS307-4

FRS-111

FRS-150

FRS-105

FR-105



FRS-124

FRS-115

Standard Track Accessories

Cat. No.	Product	Poles	Wt.	Description
FRS302-2 **FRS302-3** **FRS302-4**	Coupling	2 3 4	1 lb.	Consists of side plates, cover and bus bar connectors used to join track sections. One coupling is required for every two sections of track joined.
FRS306-2 **FRS306-3** **FRS306-4**	End Feed Box	2 3 4	1.4 lbs.	For connection to power supply at the end of track run. Serves as end cover. Concentric knockouts at end (½ or ¾ conduit). Terminals included accommodate No. 14 to No. 6 strand wire.
FRS307-2 **FRS307-3** **FRS307-4**	End Cap	2 3 4	.8 lbs.	For closing the end of a track run.
FRS-111	Fixture Hanger		.4 lbs.	Installed in track opening as an auxiliary support for lighting fixtures. Hole size is 7⁄16".

Standard Track Hangers

Cat. No.	Product	Wt.	Description
FRS-150	Track Hanger* Quantity of 2	.4 lbs.	Allows direct attachment of 3⁄8" tie rods at any point between track joints. Permits easy leveling of track sections.
FRS-105	Track Hanger*	.4 lbs.	For mounting straight track sections. Mounting hole will take 3⁄8" diameter bolt. They can be attached to straight track at any point between joints.
FR-105	Clevis Tie Rod Support	.4 lbs.	Malleable iron, with 3⁄8" cross bolt and 3⁄8"-16 tapped hole for tie rod. Fits all track hanger accessories. Must be used with FRS-105 Hanger.

Hangers for Special Applications

Cat. No.	Product	Wt.	Description
FRS-124	Duplex Track Hanger	1.4. lbs.	For 10' support spacing to be used at track joint over coupling set.
FRS-115	Low Level Track Hanger*	.4 lbs.	Used in place of FRS-105 where head room is limited. Takes 3⁄8" diameter bolts. Can be attached to straight track at any point between joints.

*Minimum of two track hangers required for each straight track section.

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Feedrail®

FRS300 Series (Plug-In Service) – Plug-In Jacks

FRS350C

FRS351C

FRS352C

FRS362C

Non-Fusible Plug in Jacks

Cat. No.	Poles	Amps	Volts	Description
FRS350C	2	15	300VAC	with 6" Leads
FRS356C	2	20	300VAC	with 6" Leads
FRS350L	3	15	300VAC	with 6" Leads
FRS356L	3	20	300VAC	with 6" Leads
FRS350M	4	15	300VAC	with 6" Leads
FRS351C	2	15	300VAC	w/Box and Cable Grip
FRS357C	2	20	300VAC	w/Box and Cable Grip
FRS351L	3	15	300VAC	w/Box and Cable Grip
FRS357L	3	20	300VAC	w/Box and Cable Grip
FRS351M	4	15	300VAC	w/Box and Cable Grip
FRS352C	2	15	120VAC	w/Box and NEMA 5-15R Receptacle
FRS358C	2	20	120VAC	w/Box and NEMA 5-20R Receptacle
FRS362C	2	15	120VAC	w/Box and NEMA L5-15R (Twist Lock) Receptacle
FRS368C	2	20	120VAC	w/Box and NEMA L5-20R (Twist Lock) Receptacle

FRS353C

FRS354C

FRS355C

FRS365C

Fusible Plug in Jacks

Cat. No.	Poles	Amps	Volts	Description
FRS353C*	2	15	120VAC	w/Box and NEMA 5-15R (Straight Blade) Receptacle*
FRS354C**	2	15	300VAC	w/Box and Cable Clamp
FRS360C**	2	20	300VAC	w/Box and Cable Clamp
FRS354L**	3	15	300VAC	w/Box and Cable Clamp
FRS360L**	3	20	300VAC	w/Box and Cable Clamp
FRS354M**	4	15	300VAC	w/Box and Cable Clamp
FRS355C**	2	15	120VAC	w/Cabinet and NEMA 5-15R (Straight Blade) Receptacle
FRS361C**	2	20	120VAC	w/Cabinet and NEMA 5-20R (Straight Blade) Receptacle
FRS365C**	2	15	120VAC	w/Cabinet and NEMA L5-15R (Twist Lock) Receptacle
FRS375C**	2	20	120VAC	w/Cabinet and NEMA L5-20R (Twist Lock) Receptacle

*Fusible with Edison base screw shell fuse holder (supplied by others)

**Fusible with 9/16 " x 2" cartridge fuses. (Supplied by others.)

Notes:

- 15 Amp fusible plug-in jack available for ease of replacement of fuses without the removal of the cover. Consult technical service group.
- 2 and 3 pole plug-in jacks are constructed to align with the bus bar configuration shown on page 20. For other configurations, consult technical service group.

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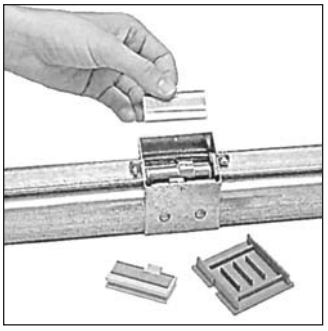
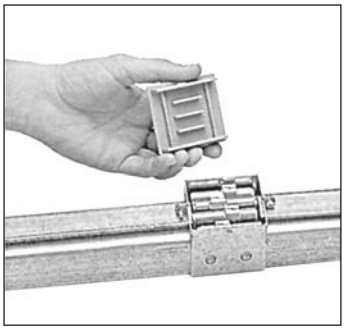
Feedrail®

FRS300 Series– Installation Procedure

Joining Track Sections with Coupling Plate (Cat. No. FRS-302)

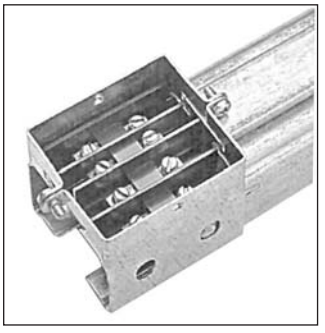


1. Bring track sections together, keeping plastic polarizing strips of both tracks on the same side. Hook bottom of coupling plate into underside of track housing and swing up into position so that holes engage dimples in sides of track housing. With pliers or by hand install the number of spring clamp bus connectors as required, the clamping tabs being in staggered positions as shown.

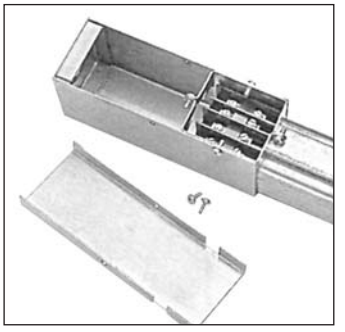


2. With bus connectors in vertical position, install cover with ribs on underside fitting between bus connectors. Loosen clamping screws if necessary to snap cover into place. Retighten screws. Joint is now complete.

Mounting End Feed Box (Cat. No. FRS-306)



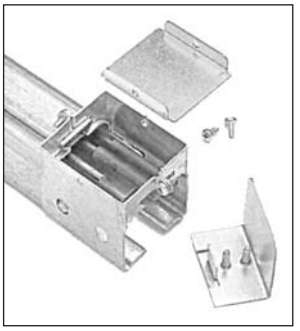
1. Slip connectors in plastic insulator over bus-bar ends so that ends are halfway into connectors. Tighten screws in connectors over bus bars. Hook bottoms of coupling plates into underside of track casing and swing up into position so that holes engage dimples on sides of casing. Bring plate together as shown. Insert and tighten clamping screws.



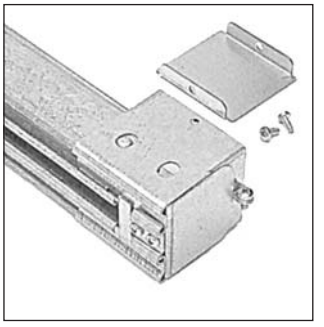
2. Slip end feed box over coupling plates as shown, lining up holes in box with tapped holes in plates. Insert and tighten screws. Position cover over box and insert and tighten two screws.

Note: Terminal Connectors are for copper wire only.

Mounting Dead End Cap (Cat. No. FRS-307)



1. Install fiber bus-stops over bus bars, pushing on as far as they will go. Hook bottoms of coupling plates into underside of track housing and swing up into position so that holes engage dimples on sides of track housing. Bring plates together as shown. Insert and tighten clamping screws.



2. Loosen clip on track end stop sufficiently to permit sliding into position as shown. Tighten screws. Install cover in position over coupling plates. Insert the two fastening screws and tighten.

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FRS300 Series (Plug-In Service) – Installation Planning and Preventative Maintenance

Installation Planning

Before a Feedrail system can be planned or an estimate of the cost prepared, the electrical and mechanical requirements that the system must meet should be known. The following outlines list the basic data needed for all applications and the additional data required for various specific applications.

Basic For All

1. Describe in detail the purpose for which the Feedrail system will be used. Will it be used with existing equipment?
2. How many conductors will be required?
3. What voltage and current is to be applied to each conductor? Where is the power source located?
4. Details about any special requirements or conditions which the installation must meet such as moisture, corrosive fumes, high or low temperatures, etc.

For Electric Cranes

5. Sketch giving number, location, length of crane runways and length of bridge. Show location of building expansion joints or expansion joints in the structure from which the Feedrail will be supported.
6. How many conductors will be required on each bridge run? How many for power? For control? How much current must each conductor carry?
7. What is the maximum travel speed of the bridge? of the hoist?
8. List of the crane's motors — main hoist, auxiliary hoist, bridge travel, trolley travel— giving the type (D.C., wound rotor, squirrel cage, etc.) of each motor and its horsepower and full-load ampere rating.

For Electric Hoists

5. Plan view sketch of the rail system on which the hoists will travel, giving the length of run, of straight sections, radii of any curves and dimensions of any switches. What is the minimum distance from Feedrail to monorail in order to clear hoist? Show location of building expansion joints or expansion joints in the structure from which the Feedrail will be supported.
6. How many hoists will be used and what is the horsepower and full load current rating of each? Include horsepower and full load current rating of travel motors of any of the hoists that are motor propelled. What are the maximum travel speeds?

For Moving Test Lines

5. Plan view sketch with dimensions showing the length of straight sections and radii of any curves, indicate the number of outlets required. If there are any sections along the run where test current will not be required, indicate their location and extent.
6. What type of equipment will be tested.
7. Give weight of units to be supported by the system.
8. What amperage range and what fusing arrangements will be required.?

For Production Machines

5. Plan view sketch with dimensions showing the location of the Feedrail system.
6. Indicate the number of conductors required and give voltage and amperage requirements of each. Give horsepower and full load current rating of each motor.
7. List any other equipment that will be powered by the Feedrail and give its full load current rating.

For Special Requirements

5. Plan view sketch with all dimensions which are necessary to make clear the location and extent of the Feedrail system, and the radii of any curves it may contain. Show the location of the power source.
6. Full details about equipment which will be operated from the system, including

(a) Horsepower and full-load current rating of any electrical motors

(b) Weight of any equipment to be supported by the system.

(c) Fusing arrangements required.

(d) Number of outlets needed.

Engineering Cooperation

Working out the details of a Feedrail system installation is not difficult once all the electrical and mechanical requirements have been definitely determined. We should like to suggest, however, that considerable time can be saved by enlisting the cooperation of Feedrail engineers from the start. They have helped work out the details of hundreds of installations and consequently have at their fingertips the answers to the questions and problems usually involved. Their cooperation is offered without obligation. Just ask the nearest representative to call — or send us complete information as outlined above with a request for recommendations.

Preventative Maintenance

At all times Feedrail equipment should be so protected and maintained as to be kept clean and dry.

Before the Feedrail system is placed in operation, it should be thoroughly checked for horizontal and vertical alignment, adequate track support and free movement of trolley travel throughout the entire track run. All track, bus bar and feed connections should be mechanically tight. The system should be checked for possible grounds or short circuits. Any paint, grease, or other foreign matter accumulated during construction should be removed from the bus bars, insulation and track interior. Blow out all dust and other loose particles from inside the track.

Expansion sections, when used, must be properly adjusted, located and supported in accordance with installation instructions. Check bus bars and casing for accurate alignment.

Feedrail is both an electrical and a moving mechanical system and therefore should be included as a part of your Preventive Maintenance Program.

Electrical Maintenance requires (1) keeping the system dry and clean to prevent electrical leakage or "shorts" across the insulation, and (2) maintaining electrical continuity by keeping bus bar contact surfaces clean and joints tight.

Mechanical Maintenance requires (1) preventing excessive wear and (2) replacing parts showing excessive wear.

The following Preventive Maintenance procedure, periodically performed, is recommended:

(a) Remove, thoroughly clean all trolleys and lubricate the wheels. Inspect contacts for excessive wear. Replace worn wheels and contacts.

(b) Clean bus bars with Feedrail Bus Bar Cleaner.

(c) Blow out all foreign particles which have accumulated inside the track.

(d) Check trolleys for free movement within the track.

(e) Check all track supports, track joints, bus bar and feed connections for tightness.

This procedure should be repeated at regular intervals, consistent with the severity of the operations and usage of the system. Plants operating two or three shifts will require more frequent inspection of the Feedrail® equipment.

Feedrail® is not normally recommended for installations subject to vibration, frequent electrical overload, corrosive fumes and other abnormal conditions. However, should such conditions exist, more frequent inspections and maintenance will be required.

Before additional electrical loads are added to the system, it should be determined that sufficient capacity is available.

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Feedrail®

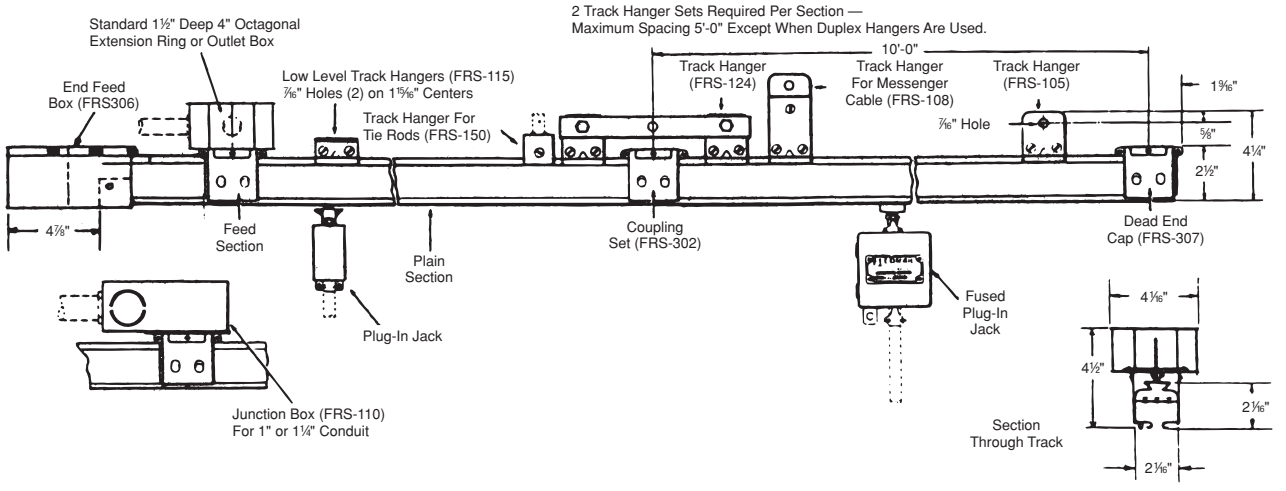
FRS300 Series (Plug-In Service) – Basic Dimensions/Mounting Methods

Basic Dimensions

As an aid in planning mountings, the basic dimensions of the Feedrail Plug-In system is shown below. These are offered as a guide only. For detailed or certified drawings, consult technical service group.

Mounting Methods

Examples of the methods commonly used for mounting the Feedrail Plug-In system is shown below. These methods can be used in existing plants as well as in new buildings. Engineers and contractors will readily be able to devise other methods to suit special installations. In every case the mounting should be designed to insure a rigid installation in both horizontal and vertical alignment.



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Feedrail®

FRS300 Series (Plug-In Service) – Typical Specification

As an aid to preparing specifications for a Feedrail® installation, the following wording is suggested. You will note this specification contains the primary electrical and mechanical features of the Genuine Feedrail® System.

FRS300 SERIES (Plug-In Service)

The Plug-In Busway System shall be of the metal enclosed type with internally track-supported Plug-In Jacks as manufactured by:

Genuine Feedrail®
Thomas & Betts Corp.
Industrial Products

The System shall have a voltage rating 300 Volts A.C. or D.C. (2 pole) (3 pole) (4 pole) and a continuous current carrying capacity of (40) (50) Amperes per pole. The full current carrying capacity of the system shall be maintained throughout.

The System shall permit longitudinal movement of the housings and bus bars, independent of each other, in order to allow for unequal expansion and contraction as a result of temperature changes.

The System shall consist of standardized, interchangeable, Feedrail units — track sections, coupling sets, dead end caps, track hangers and power takeoff Jacks as called for on the plans.

Track sections shall be one-piece, 18 gauge, rolled, zinc-coated sheet steel enclosures having a continuous slot in the bottom and a heavy keystone shaped rib in the top. Round copper bus bars, capable of carrying (40) (50) Amperes per pole continuously without overheating, shall be mounted within the steel enclosure on arc-resistant insulators.

A plastic strip bumper guard shall be incorporated in the track housing to insure proper insertion of the polarized Plug-In Jack.

When inserted, the Plug-In Jack is automatically grounded to the track system for safe operation.

Track supported Plug-In Jacks shall be Cat.No._____ as listed in the Feedrail Catalog.

The Jack shall have spring-loaded contacts for direct, positive contact with the bus bars.

Plug-In Jacks can be inserted in the track slot at any point. A quarter turn, after insertion, makes electrical contact and locks the Jack in place.

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Feedrail®

FM & FX Series (Multi-Conductor Trolley Service) – Design & Construction

Busway Electrification Systems For Movable Trolley Service

Current Carrying Capacity

Track rating: 60 amperes (continuous); 90 amperes (intermittent). Trolleys rated 15 or 30 amperes (continuous).

Voltage

300 Volts,4 or 5 Pole Systems

600 Volts,2, 3, or 4 Pole Systems

Track Supports

Steel clamp type track hangers for supporting track sections from strap or rod. Additional track hangers can be attached at intermediate points.

Track

Track sections consist of a brake pressed welded two-piece 13-gauge zinc coated steel housing and the enclosed current carrying bus bars and insulators, all factory assembled in convenient lengths ready for easy, foolproof installation on the job. The lower horizontal portions of the housing serve as smooth, rigid runways for the trolleys.

"Multi-Conductor" track sections are available in various types — Plain, Door, Feed, Sectionalizing, Transfer, Curved and Expansion Track sections

Bus bars are of hard drawn copper. They are amply proportioned to carry the specified current of 60 amperes per pole continuously, 90 amperes per pole intermittently, without overheating. Bus bar connectors assure full current carrying capacity across the joints without interfering with the free travel of the trolley contacts.

Insulators are made of a high insulating and arc-resistant material. They are held on 12" centers by the casing.

Trolleys

Trolleys are available in fusible and non-fusible types.

Basically, all Feedrail "Multi-Conductor" trolleys have a chassis-insulator-contact assembly. The chassis is of heavy gauge steel. The trolley wheels and guide wheels are of the ball-bearing type. A substantially proportioned insulator block combines the best insulating properties with high arc resistance.

Feedrail "Multi-Conductor" trolleys are furnished with COPPER GRAPHITE BRUSH CONTACTS for movement up to 250 feet per minute. For rate of travel or conditions other than above, please consult factory.

A polarizing tab on the chassis, operating in conjunction with a stop in the door track section, permits insertion of the trolleys only one way. Equipment grounding may be made through the trolleys. **Weights in excess of 40 pounds per trolley are not recommended.**

Grounding

For the safety of personnel, the track casings of the Feedrail system may be used as an equipment grounding conductor for grounding equipment through the individual trolleys.

Equipment grounding may be made by using the screw on the underside of the trolley chassis or on trolleys having cabinets or boxes by using the grounding screw within the box. Track housing must be grounded through conduit or other suitable means.

Feedrail "Multi-Conductor" systems are designed for indoor service in essentially dry locations. Feedrail systems are electrified tracks in which the current carrying components are enclosed in protective steel housings. Smooth riding internally track-supported trolleys take off current and provide electric power for crane and hoist or other types of electrification systems.

Feedrail "Multi-Conductor" systems have been specifically developed to provide safe electrification for crane bridges, monorail-hoist installations, test lines, machine tools and similar applications.

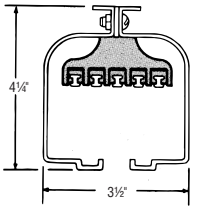
The Feedrail "Multi-Conductor" systems are made up of standardized units, factory assembled for fast, complete installation without on-site fabrications.

Feedrail "Multi-Conductor" systems may be used to provide both power and control. They are ideally suited for use on control circuits where other standard Feedrail systems supply heavier electrification requirements.

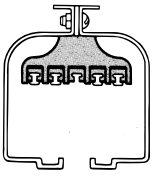
Feedrail® is listed by Underwriter's Laboratories, Inc. (U.L.) under BUSWAYS AND ASSOCIATED FITTINGS (File E11348) and as a CRANE AND HOIST ELECTRIFICATION SYSTEM (File E31188). Feedrail® is also listed by the Canadian Standards Association (C.S.A. under WIREWAYS AND BUSWAYS (File 7907).

For specific item listing currently in effect, consult technical service group.

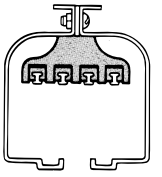
Bus Bar Arrangement



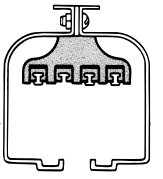
60 Amp
5 POLE
300 VOLT



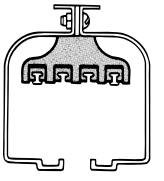
60 Amp
4 POLE
300 VOLT



60 Amp
4 POLE
600 VOLT



60 Amp
3 POLE
600 VOLT



60 Amp
2 POLE
600 VOLT

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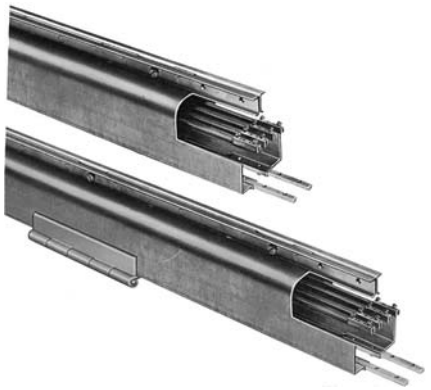
Feedrail®

FM & FX Series (Multi-Conductor Trolley Service) – Track Sections



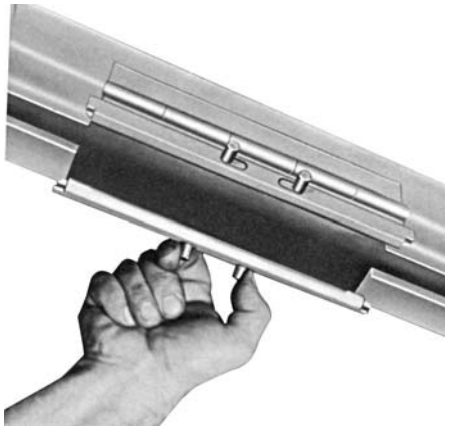
Continuous Rating: 60 Amperes
Intermittent Rating: 90 Amperes (1 minute off, 1 minute on)

Plain Track

Sections complete with Bus Bars. Bus Bar Connectors (shown) are supplied with Coupling Set FX102.

Cat. No.	Volts	Poles	Length*	Weight
FM200	**600**	2	10'	48 lbs.
FM300	**600**	3	10'	50 lbs.
FM400	**600**	4	10'	52 lbs.
FX400	**300**	4	10'	52 lbs.
FX500	**300**	5	10'	54 lbs.
FX130		without Bus Bars	10'	38 lbs.

*10 feet is standard length. Shorter lengths furnished on special order.



Door Track

Door track sections are identical to plain track except for the addition of two hinged doors in the bottom for the insertion and removal of trolleys. When closed, the doors are securely locked and accurately aligned with the rest of the track to form an uninterrupted runway for the trolleys. Hinged doors are easy to open or close. No tools are required. Pressing pins together against spring pressure releases locking bolts. Door openings are polarized so trolleys cannot be inserted in improper polarity.

Sections complete with Bus Bars. Bus Bar Connectors (shown) are supplied with Coupling Set FX102.

Cat. No.	Volts	Poles	Length*	Weight
FM201	**600**	2	10'	48 lbs.
FM301	**600**	3	10'	50 lbs.
FM401	**600**	4	10'	52 lbs.
FX401	**300**	4	10'	52 lbs.
FX501	**300**	5	10'	54 lbs.
FX131		without Bus Bars	10'	38 lbs.

*10 feet is standard length. Shorter lengths furnished on special order.

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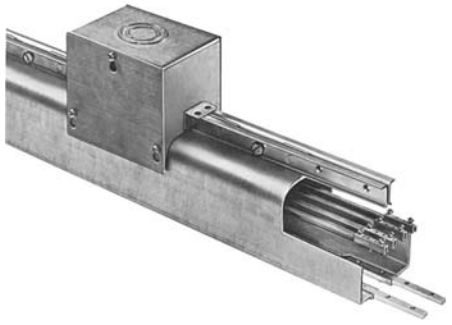
Feedrail®

FM & FX Series (Multi-Conductor Trolley Service) – Track Sections



Continuous Rating: 60 Amperes
Intermittent Rating: 90 Amperes (1 minute off, 1 minute on)

Feed-In Track

A Feed-in track section is supplied with a Feed-in Box built in, through which electrical connections to the power supply can be made. Box has concentric knockouts for ¾", 1" or 1¼" conduit on top. Plates on both sides allow access to pressure type terminals which accommodate No. 14 to No. 4 stranded wire. Feed Track Sections can be provided with or without doors.

Sections complete with Bus Bars, without Door. Bus Bar Connectors (shown) are supplied with Coupling Set FX102.

Cat. No.	Volts	Poles	Length*	Weight
FM203	**600**	2	10'	53 lbs.
FM303	**600**	3	10'	55 lbs.
FM403	**600**	4	10'	57 lbs.
FX403	**300**	4	10'	57 lbs.
FX503	**300**	5	10'	59 lbs.

*10 feet is standard length. Shorter lengths furnished on special order.

Sections complete with Bus Bars, with Door. Bus Bar Connectors (shown) are supplied with Coupling Set FX102.

Cat. No.	Volts	Poles	Length*	Weight
FM204	**600**	2	10'	53 lbs.
FM304	**600**	3	10'	55 lbs.
FM404	**600**	4	10'	57 lbs.
FX404	**300**	4	10'	57 lbs.
FX504	**300**	5	10'	59 lbs.

*10 feet is standard length. Shorter lengths furnished on special order.

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Feedrail®

FM & FX Series (Multi-Conductor Trolley Service) – Track Sections

Continuous Rating: 60 Amperes
Intermittent Rating: 90 Amperes
(1 minute off, 1 minute on)

Curved Track

Curved track sections are of the same general specifications as plain track. All standard curved track sections are full 90° curves. Special sections with different degree of arc and radius from those listed at right can be furnished to order. Minimum radius, 2'6". Maximum arc length per single curved section is 12'6".

90° Curves

Sections complete with Bus Bars. Bus bar Connectors (shown) are supplied with Coupling Set FX102.

Cat. No.	RADIUS (to center line)	Volts	Poles	Weight
FM211	2'6"	**600**	2	18 lbs.
FM311	2'6"	**600**	3	19 lbs.
FM411	2'6"	**600**	4	20 lbs.
FM212	3'	**600**	2	23 lbs.
FM312	3'	**600**	3	24 lbs.
FM412	3'	**600**	4	25 lbs.
FM213	3'6"	**600**	2	26 lbs.
FM313	3'6"	**600**	3	27 lbs.
FM413	3'6"	**600**	4	28 lbs.
FM214	4'	**600**	2	31 lbs.
FM314	4'	**600**	3	32 lbs.
FM414	4'	**600**	4	33 lbs.
FM215	4'6"	**600**	2	35 lbs.
FM315	4'6"	**600**	3	36 lbs.
FM415	4'6"	**600**	4	37 lbs.
FM216	5'	**600**	2	40 lbs.
FM316	5'	**600**	3	41 lbs.
FM416	5'	**600**	4	42 lbs.
FM217	5'6"	**600**	2	44 lbs.
FM317	5'6"	**600**	3	45 lbs.
FM417	5'6"	**600**	4	46 lbs.
FX411	2'6"	**300**	4	20 lbs.
FX511	2'6"	**300**	5	21 lbs.
FX412	3'	**300**	4	25lbs.
FX512	3'	**300**	5	26 lbs.
FX413	3'6"	**300**	4	28 lbs.
FX513	3'6"	**300**	5	29 lbs.
FX414	4'	**300**	4	33 lbs.
FX514	4'	**300**	5	34 lbs.
FX415	4'6"	**300**	4	37 lbs.
FX515	4'6"	**300**	5	38 lbs.
FX416	5'	**300**	4	42 lbs.
FX516	5'	**300**	5	43 lbs.
FX417	5'6"	**300**	4	46 lbs.
FX517	5'6"	**300**	5	47 lbs.

Sections also available without bus bars. Consult technical service group.

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Feedrail®

FM & FX Series (Multi-Conductor Trolley Service) – Track Sections

Continuous Rating: 60 Amperes
Intermittent Rating: 90 Amperes (1 minute off, 1 minute on)

Transfer Track – One End Flared

Transfer track sections are similar to plain track sections except that one or two ends are flared for use at points of transfer on slide switches, turn-tables, etc. (Transfer track sections for use on turntables, or slide switches are not stock items but are manufactured specifically to meet given dimensions.)

A nose insulator at the transfer point serves as a guide for the proper entrance of the trolley. Curved transfer sections with one or both ends flared, and with feed-in boxes installed can be furnished on special order.

Sections complete with Bus Bars. Bus Bar Connectors (shown) are supplied with Coupling Set FX102.

Cat. No.	Volts	Poles	Length*	Weight
FX483	**300**	4	10'	48 lbs.
FX583	**300**	5	10'	51 lbs.

Sections without Bus Bars or Connectors

FX185			10'	38 lbs.

*10 feet is standard length. Shorter lengths furnished on special order. See page 37 and 38 for transfer type trolleys.

Continuous Rating: 60 Amperes
Intermittent Rating: 90 Amperes (1 minute off, 1 minute on)

Transfer Track – Two Ends Flared

Transfer track sections having two flared ends and complete with bus bars, listed below, have a feed box installed in each track section.

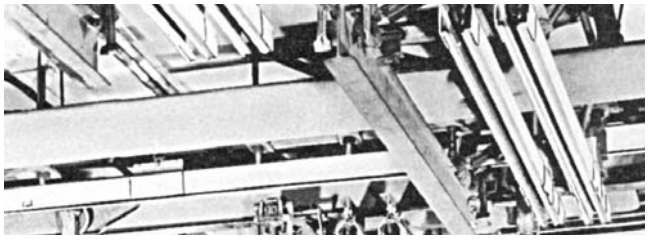
Sections complete with Bus Bars and Feed Box Installed.

Cat. No.	Volts	Poles	Length*	Weight
FX493	**300**	4	10'	52 lbs.
FX593	**300**	5	10'	55 lbs.

Sections without Bus Bars or Feed Box

FX195			10'	38 lbs.

*10 feet is standard length. Shorter lengths furnished on special order. See page 37 and 38 for transfer type trolleys.



Where motor propelled hoists are used on runs which include transfer points, it is necessary to use Duplex Transfer Type Trolleys as shown on page 37 and 38. Current is maintained to one trolley while the other crosses the transfer point.

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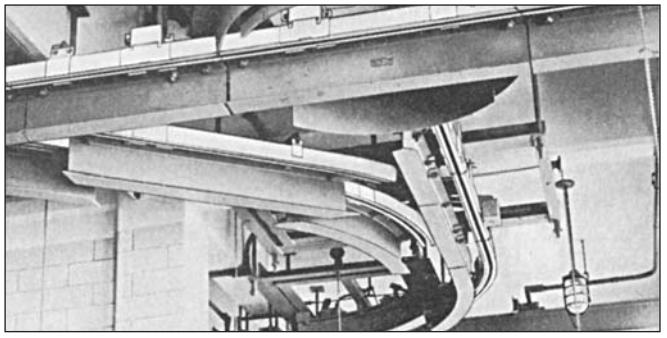
Feedrail®

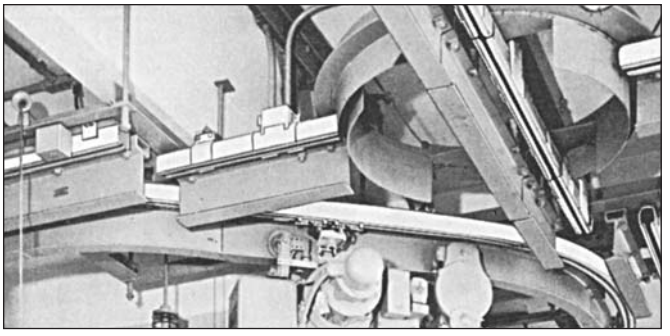
FM & FX Series (Multi-Conductor Trolley Service) – Track Sections

Transfer Track Used with Switches and Turntables



Typical of the many switch and turntable installations using Feedrail "Multi-Conductor" are the illustrations on this page. The use of Feedrail provides a safe, fool-proof electrification system for the hoists at all points along the monorail runs.

Feedrail transfer sections for use with turntables or slide switches are not stock items but are fabricated specifically to conform to given dimensions of the monorail manufacturer. The turntables, switches and other monorail components are by others.

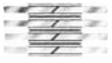


Wherever any switch or turntable layout is involved, considerable time can be saved by enlisting the cooperation of Feedrail engineers at the start.

The photograph at left shows a monorail run containing slide switches and a turntable equipped with Feedrail.

Above, the same installation showing change in position of switches and turntables.

Cutout view shows insulator.



Underside view of bus bar air gaps in insulator shown above.

Continuous Rating: 60 Amperes

Intermittent Rating: 90 Amperes (1 minute off, 1 minute on)

Sectionalizing Track

Sectionalizing track sections isolate portions of a track run. They are the same as plain track sections except near one end of the track each bus bar is interrupted by an air gap. The bus bars are so formed and positioned by a special insulator that all trolleys smoothly cross the air gap while maintaining electrical continuity. The circuits on both sides of the gap are momentarily tied together through the trolley contacts as the trolley passes the air gap.

Special sectionalizing track sections are made that do interrupt the current to the trolley. When used, these require two electrically connected trolleys to maintain current through the trolley at all times. They must not be used as a circuit interrupting device. Consult technical service group for details.

Sections complete with Bus Bars and Connectors.

Cat. No.	Volts	Poles	Length*	Weight
FM246	**600**	2	10'	42 lbs.
FM346	**600**	3	10'	45 lbs.
FM446	**600**	4	10'	48 lbs.
FX446	**300**	4	10'	48 lbs.
FX546	**300**	5	10'	51 lbs.

*10 feet is standard length. Shorter lengths furnished on special order.

Thomas&Betts

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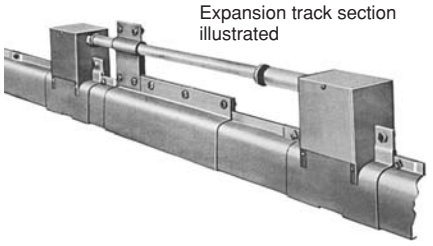
Feedrail®

FM & FX Series (Multi-Conductor Trolley Service) – Track Sections



Expansion track section illustrated

Continuous Rating: 60 Amperes
Intermittent Rating: 90 Amperes (1 minute off, 1 minute on)

Expansion Track

Expansion track sections are for use where it is necessary to compensate for the difference in total expansion or contraction between steel track housings and copper bus bars. They must be used on installations across a building or structural expansion joint. Sections are designed and constructed for the particular application. Consult technical service group for details furnishing installation requirements.

Sections complete with Bus Bars and Connectors.

Cat. No.	Volts	Poles	Length*	Weight
FM255	600	2	10'	60 lbs.
FM355	600	3	10'	63 lbs.
FM455	600	4	10'	66 lbs.
FX455	300	4	10'	66 lbs.
FX555	300	5	10'	69 lbs.

*10 feet is standard length. Shorter lengths furnished on special order.

While each standard Feedrail "Multi-Conductor" plain or door track section allows for unequal expansion or contraction between the steel track housing and the copper bus bars, it cannot compensate for the total expansion or contraction on a long run without the use of Expansion Track sections.

At lease one Expansion Track section should be installed in each 400 ft. of track run. Additional Expansion Track sections may be required if the installation is subjected to a wide range of temperature changes.

Expansion Track sections may also be necessary in enclosed loops or serpentine layouts, depending upon size, use and temperature conditions.

Building Expansion Track

Building Expansion Track sections must be used whenever an installation is made across a building expansion joint, unless the Feedrail is so supported that building expansion will not affect Feedrail operation.

The standard 10' Building Expansion track section is designed to provide 2" of expansion and 2" of contraction of the steel housing above and below the normal 10' length (at 75°F). If the temperature at the time of installation is other than 75°F, due compensation must be made according to the chart on page 44. The bus bars and track housing in this section telescope to provide a continuous surface for the trolley contacts and the ball bearing support wheels of the trolley. Enclosed flexible jumpers connect the bus bars and maintain full current carrying capacity across the joints.

Bus Bar Expansion Track

A Bus Bar Expansion Track section is also available which allows for expansion or contraction of the bus bars only where it is not necessary to compensate for steel expansion or contraction. Consult technical service group for details, furnishing installation requirements.

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Feedrail®

FM & FX Series (Multi-Conductor Trolley Service) – Track Accessories and Hangers

FX102

FM407

FM409

FR693

FR140

FX199

FR105

FX198

M78

M77

Track Accessories

Cat. No.	Product	Type System	Wt.	Description
FX102	Coupling Set	All	1½ lbs.	Set of two heavy gauge pressed steel plates serves as a coupling for all straight track sections. Set includes bus bar connectors. One Coupling Set required with each track joint, order separately.
FM407 **FX507**	Dead End Cap Dead End Cap	**600V** **300V**	2 lbs. 2 lbs.	Heavy gauge pressed steel box for enclosing the end of track run. Includes a trolley stop and end insulator.
FM409 **FX509**	End Feed Box End Feed Box	**600V** **300V**	4¾ lbs. 4⅞ lbs.	Heavy gauge pressed steel Junction box and Cover through which electrical connections to the power supply can be made at the end of a track run. Has concentric knock-outs in the end for 1⅜", 1¾" or 2" conduit. Terminals included accommodate No. 14 to 4 stranded wire.
FR693	Transfer Point Hanger	All	¾ lb.	Set of two heavy gauge pressed steel plates formed to match flared ends of transfer sections. Use as hanger for attaching to supporting members at open end of transfer track sections.
FR140	Track Hanger Set for Curved Section	All	⅜ lb.	Heavy gauge pressed steel plates for mounting of curved sections to supporting members. Fits over top of curved track housing rib at any of the insulator bolting points. Complete with ⅜" mounting bolts.
FX199	Track Hanger — for ⅜" Rod	All	¼ lb.	Heavy gauge steel for intermediate support of track from rods. 7/16" Dia. hole in top takes ⅜" rod.
FR105	Clevis - Tie Rod	All	⅛ lb.	Malleable iron, with ⅜" cross bolt and ⅜"-16 tapped hole for tie rod. Fits all track accessories.
FX198	Transfer Hanger for Strap	All	¼ lb.	Heavy gauge steel for mounting of track sections supporting strap or angle, etc. Fits over rib on top of track. Complete with ⅜" Bolt.

Track Cleaning Tools

These special trolley-mounted Dust Remover and Bus Bar Cleaners are quickly and easily used to keep a Feedrail "Multi-Conductor" system in prime working condition. They are inserted through the door track section, with the power off, and simply pulled back and forth along the length of a track run, cleaning all bus bars at the same time. Their frequency of use will depend upon the severity of foreign matter accumulations, although a regularly scheduled preventive maintenance program is highly recommended. Refer to page 46 for details.

Cat. No.	Weight	Systems	Description
M78	2¼ lbs.	All	Dust Remover with Bristle Brushes
M72	2⅜ lbs.	600 Volt	Bus Bar Cleaners with Cleaning Stones
M77	2½ lbs.	300 Volt	

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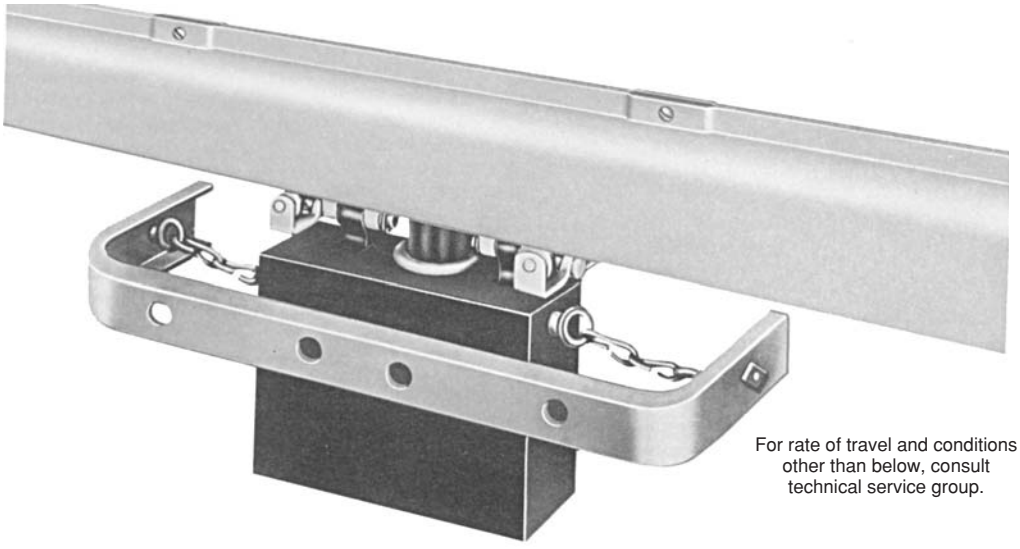
Feedrail®

FM & FX Series (Multi-Conductor Trolley Service) – Trolley Design & Construction

Current Carrying Capacity:
Continuous current rating
15 and 30 Amperes
Voltage:
600 Volts A.C. or 250 Volts D.C.
Non Fusible, 2, 3, or 4 pole
600 Volts A.C. or 250 Volts D.C.
Fusible, 2, 3, or 4 pole
300 Volts A.C. or D.C.
Non Fusible, 4 or 5 pole
250 Volts A.C. or D.C.
Fusible, 4 or 5 Pole



For rate of travel and conditions other than below, consult technical service group.

Design and Construction

The same efficient engineering and cleancut construction which is a hallmark of the entire Feedrail system is evident in the internally track supported “Multi-Conductor” trolleys.

The chassis of these trolleys is of one-piece heavy gauge steel. It is equipped with heavy duty ball-bearing wheels for support; horizontally mounted ball bearing guide wheels running in the slot of the track to prevent slewing; and ball-bearing wheels on pivoted arms of the undercarriage to prevent upthrust. This wheel combination assures smooth, easy running trolleys.

A polarizing tab is on the chassis. This, operating in conjunction with a stop at the door track opening, prevents insertion of the trolleys in improper polarity. A bumper is attached to each end of the chassis.

The insulator-contact assembly consists of a substantially proportioned mechanically strong arc-resisting insulator block on which the contact brushes are mounted and held in true alignment. Springs keep the brushes in continuous firm contact with the bus bars. The insulator-contact assembly is fastened to the chassis by machine screws and can be removed as a unit.

Feedrail “Multi-Conductor” trolleys are furnished with Copper Graphite Brush Contacts for movement up to 250 feet per minute and on all track runs, including curved track sections. Trolleys have crimp type connectors. A cable clamp is provided. Trolleys are available with or without pulling bracket and chain linkage. Equipment ground is provided on all trolleys. Standard trolleys are available in fusible and non-fusible types; transfer trolleys are of non-fusible type, either single or duplex. Transfer type trolleys are especially designed to facilitate crossing of gaps between crane bridges and spur runs or between slide switch sections and the main run. Where motor propelled hoists are used on runs which include transfer points, duplex type transfer trolleys must be used to insure continuous current while crossing the transfer points.

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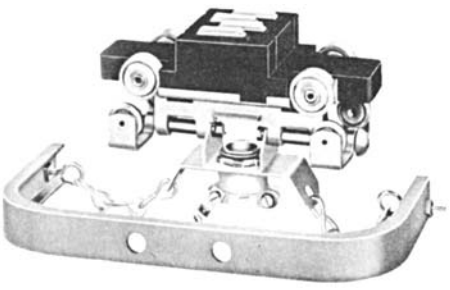
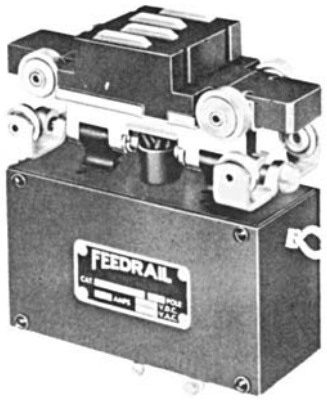
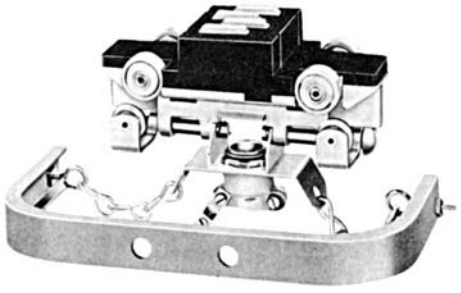
FM & FX Series (Multi-Conductor Trolleys for 2, 3 or 4 Pole 600 Volt Systems) – Trolleys



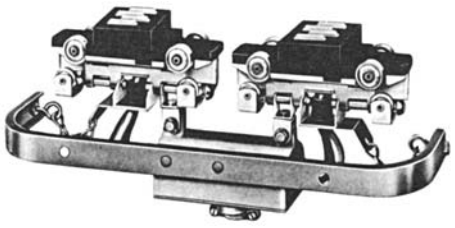
Non-Fusible Without Cabinet or Terminal Block
(4 Pole Shown)



Non-Fusible With Cabinet
(4 Pole Shown)



Transfer type
Non-Fusible Without Cabinet
(4 Pole Shown)



Transfer type
Duplex-Non-Fusible With Cast Box
(4 Pole Shown)

600 Volt System Standard Type Trolleys* – 15 Amperes†

Cat. No. Without Bracket or Chains	Wt.	Cat. No. With Bracket and Chains	Wt.	Poles	Type
M6001	3 lbs.	**M6002**	4 lbs.	4	Non-Fusible w/o Cabinet
M6003	2¾ lbs.	**M6004**	3¾ lbs.	3	Non-Fusible w/o Cabinet
M6005	2⅝ lbs.	**M6006**	3⅝ lbs.	2	Non-Fusible w/o Cabinet
M6007	5¼ lbs.	**M6008**	6¾ lbs.	4	Non-Fusible with Cabinet & Terminal Block
M6009	5 lbs.	**M6010**	6½ lbs.	3	Non-Fusible with Cabinet & Terminal Block
M6011	4⅞ lbs.	**M6012**	6⅜ lbs.	2	Non-Fusible with Cabinet & Terminal Block
M6013	13 lbs.	**M6014**	14½ lbs.	4	Fusible - With Cabinet (600V)
M6015	12½ lbs.	**M6016**	14 lbs.	3	Fusible - With Cabinet (600V)
M6017	12 lbs.	**M6018**	13½ lbs.	2	Fusible - With Cabinet (600V)

600 Volt System Standard Type Trolleys* – 30 Amperes

Cat. No. Without Bracket or Chains	Wt.	Cat. No. With Bracket and Chains	Wt.	Poles	Type
M6001A	3 lbs.	**M6002A**	4 lbs.	4	Non-Fusible w/o Cabinet
M6003A	2¾ lbs.	**M6004A**	3¾ lbs.	3	Non-Fusible w/o Cabinet
M6005A	2⅝ lbs.	**M6006A**	3⅝ lbs.	2	Non-Fusible w/o Cabinet
M6007A	5¼ lbs.	**M6008A**	6¾ lbs.	4	Non-Fusible with Cabinet & Terminal Block
M6009A	5 lbs.	**M6010A**	6½ lbs.	3	Non-Fusible with Cabinet & Terminal Block
M6011A	4⅞ lbs.	**M6012A**	6⅜ lbs.	2	Non-Fusible with Cabinet & Terminal Block
M6013A	13 lbs.	**M6014A**	14½ lbs.	4	Fusible - With Cabinet (600V)
M6015A	12½ lbs.	**M6016A**	14 lbs.	3	Fusible - With Cabinet (600V)
M6017A	12 lbs.	**M6018A**	13½ lbs.	2	Fusible - With Cabinet (600V)

*Amperage is for continuous electrical load. Trolley contacts should not be used to make or break power to electrical load.
†A 5 ampere roller contact (part No. S15056) can also be provided. To order, add suffix "R".
Fusible Trolleys take 13/16" x 5" Cartridge Type Fuses. (Fuses Not Included).

600 Volt System Transfer Type Trolleys* – 15 Amperes

Cat. No. Without Bracket or Chains	Wt.	Cat. No. With Bracket and Chains	Wt.	Poles	Type
M6021	3⅝ lbs.	**M6022**	4¾ lbs.	4	Non-Fusible w/o Cabinet
M6023	3⅜ lbs.	**M6024**	4⅜ lbs.	3	Non-Fusible w/o Cabinet
M6025	3¼ lbs.	**M6026**	4¼ lbs.	2	Non-Fusible w/o Cabinet
M6027	9½ lbs.	**M6028**	11 lbs.	4	Duplex - Non Fusible w/ Cast Box
M6029	9½ lbs.	**M6030**	10¾ lbs.	3	Duplex - Non Fusible w/ Cast Box
M6031	9 lbs.	**M6032**	10½ lbs.	2	Duplex - Non Fusible w/ Cast Box

600 Volt System Transfer Type Trolleys* – 30 Amperes

Cat. No. Without Bracket or Chains	Wt.	Cat. No. With Bracket and Chains	Wt.	Poles	Type
M6021A	3⅝ lbs.	**M6022A**	4¾ lbs.	4	Non-Fusible w/o Cabinet
M6023A	3⅜ lbs.	**M6024A**	4⅜ lbs.	3	Non-Fusible w/o Cabinet
M6025A	3¼ lbs.	**M6026A**	4¼ lbs.	2	Non-Fusible w/o Cabinet
M6027A	9½ lbs.	**M6028A**	11 lbs.	4	Duplex - Non Fusible w/ Cast Box
M6029A	9¼ lbs.	**M6030A**	10¾ lbs.	3	Duplex - Non Fusible w/ Cast Box
M6031A	9 lbs.	**M6032A**	10½ lbs.	2	Duplex - Non Fusible w/ Cast Box

*Amperage is for continuous electrical load. Trolley contacts should not be used to make or break power to electrical load.

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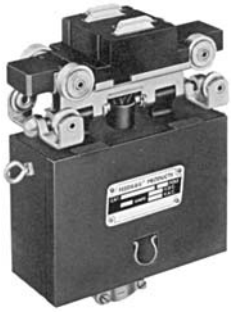
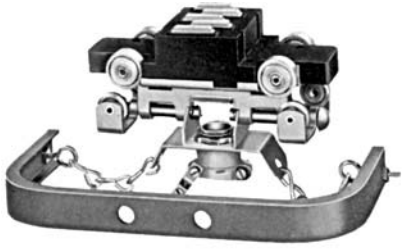
FM & FX Series (Multi-Conductor Trolleys for 4 or 5 Pole 300 Volt Systems) – Trolleys

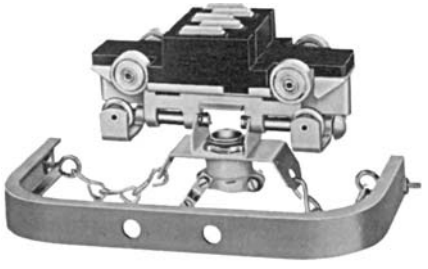


Fusible - With Cabinet
(4 Pole Shown)

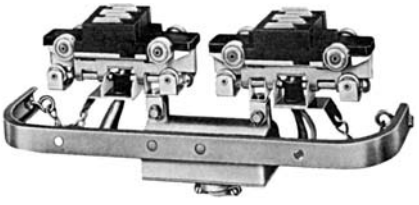


Non-Fusible - Without Cabinet or Terminal Block
(5 Pole Shown)

Non-Fusible - With Cabinet
(5 Pole Shown)



Transfer type
Non-Fusible - Without Cabinet
(5 Pole Shown)



Transfer type
Duplex-Non-Fusible - With Cast Box
(5 Pole Shown)

300 Volt System Standard Type Trolleys* – 15 Amperes†

Cat. No. Without Bracket or Chains	Wt.	Cat. No. With Bracket and Chains	Wt.	Poles	Type
M10	2½ lbs.	**M11**	3¾ lbs.	4	Non-Fusible w/o Cabinet
M60	2⅝ lbs.	**M61**	3⅝ lbs.	5	Non-Fusible w/o Cabinet
M20	4⅞ lbs.	**M21**	6⅛ lbs.	4	Non-Fusible with Cabinet & Terminal Block
M70	5 lbs.	**M71**	6¼ lbs.	5	Non-Fusible with Cabinet & Terminal Block
M30	5¾ lbs.	**M31**	7 lbs.	4	Fusible - With Cabinet (250V)
M80	5⅞ lbs.	**M81**	7⅛ lbs.	5	Fusible - With Cabinet (250V)

300 Volt System Standard Type Trolleys* – 30 Amperes

Cat. No. Without Bracket or Chains	Wt.	Cat. No. With Bracket and Chains	Wt.	Poles	Type
M10A	2½ lbs.	**M11A**	3¾ lbs.	4	Non-Fusible w/o Cabinet
M60A	2⅝ lbs.	**M61A**	3⅞ lbs.	5	Non-Fusible w/o Cabinet
M20A	4⅞ lbs.	**M21A**	6⅛ lbs.	4	Non-Fusible with Cabinet & Terminal Block
M70A	5 lbs.	**M71A**	6¼ lbs.	5	Non-Fusible with Cabinet & Terminal Block
M30A	5¾ lbs.	**M31A**	7 lbs.	4	Fusible - With Cabinet (250V)
M80A	5⅞ lbs.	**M81A**	7⅛ lbs.	5	Fusible - With Cabinet (250V)

*Amperage is for continuous electrical load. Trolley contacts should not be used to make or break power to electrical load.
†A 5 ampere roller contact (part No. S15056) can also be provided. To order, add suffix "R".
Fusible Trolleys take ⅜" x 2" Cartridge Type Fuses. (Fuses Not Included).

300 Volt System Transfer Type Trolleys* – 15 Amperes

Cat. No. Without Bracket or Chains	Wt.	Cat. No. With Bracket and Chains	Wt.	Poles	Type
M12	3⅛ lbs.	**M13**	4⅜ lbs.	4	Non-Fusible w/o Cabinet
M62	3¼ lbs.	**M63**	4½ lbs.	5	Non-Fusible w/o Cabinet
M14	6⅜ lbs.	**M15**	9¼ lbs.	4	Duplex - Non-Fusible w/Cast Box
M64	6⅝ lbs.	**M65**	9½ lbs.	5	Duplex - Non-Fusible w/Cast Box

300 Volt System Transfer Type Trolleys* – 30 Amperes

Cat. No. Without Bracket or Chains	Wt.	Cat. No. With Bracket and Chains	Wt.	Poles	Type
M12A	3⅛ lbs.	**M13A**	4⅜ lbs.	4	Non-Fusible w/o Cabinet
M62A	3¼ lbs.	**M63A**	4½ lbs.	5	Non-Fusible w/o Cabinet
M14A	6⅜ lbs.	**M15A**	9¼ lbs.	4	Duplex - Non-Fusible w/Cast Box
M64A	6⅝ lbs.	**M65A**	9½ lbs.	5	Duplex - Non-Fusible w/Cast Box

*Amperage is for continuous electrical load. Trolley contacts should not be used to make or break power to electrical load.

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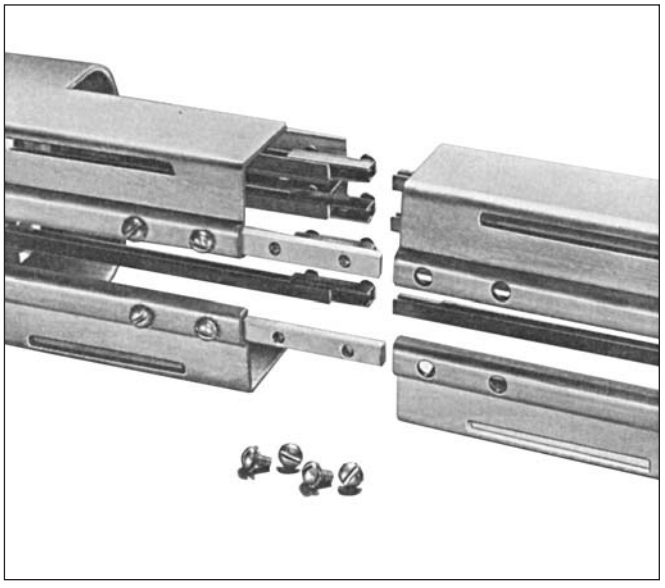
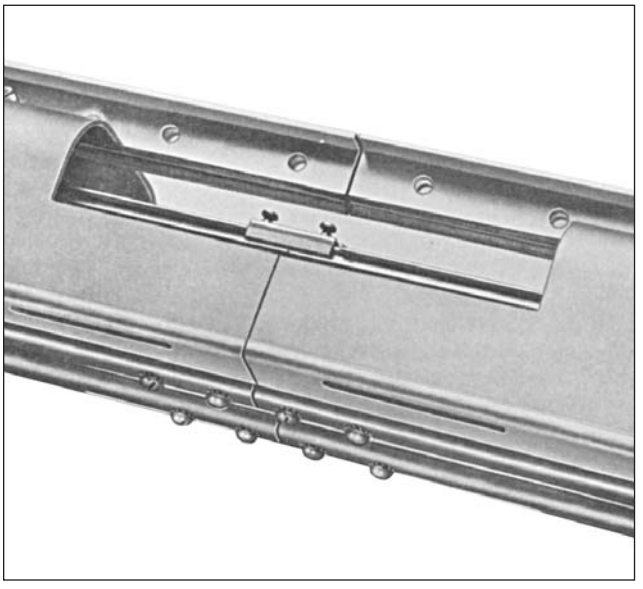
FM & FX Series (Multi-Conductor Trolley Service) – Installation Procedure

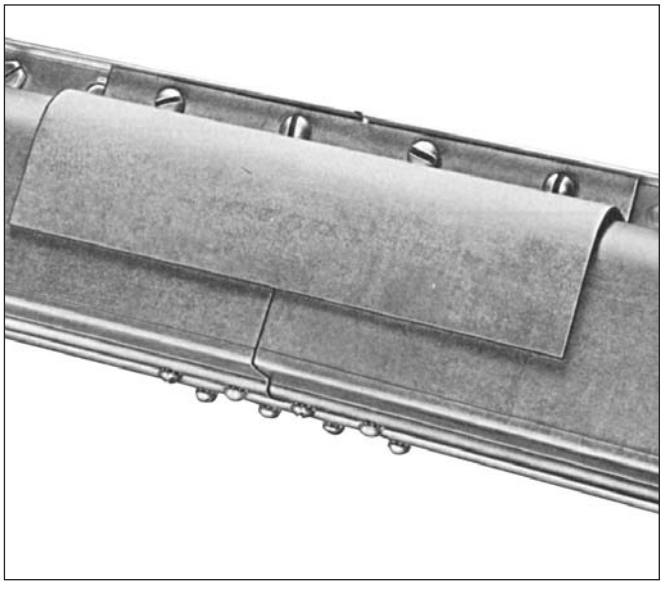
Joining Straight Track Sections with Coupling Plate FX102



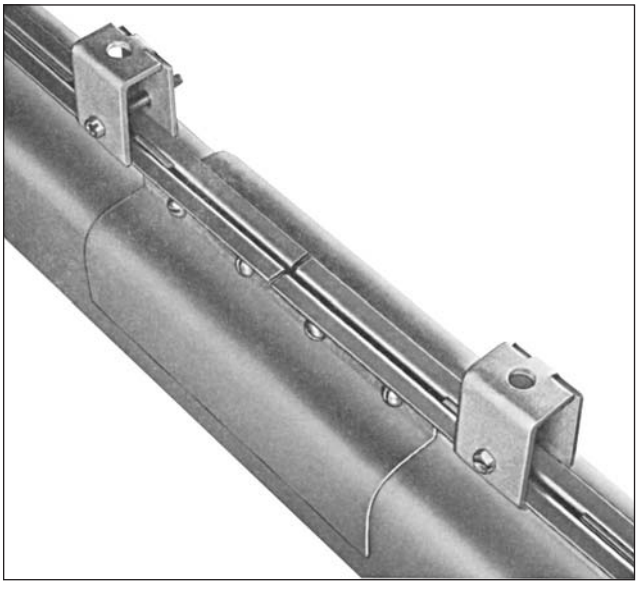
1. Track sections are furnished with two track connecting bars at one end. Place sections end to end so that sections with and without connectors are facing.



2. Install Bus Bar Connectors on bus bars. Bring sections together, lining up threaded holes in connecting bars with the holes in the bottom of the track housing. Tighten connecting bar fastening screws to 25 inch-pounds torque. Slide ends of bus bars into unattached ends of bus bar connectors. Bring bus bars together, aligning ends of bus bars in section being installed with end of the track housing, shifting bus bars slightly if necessary (up to 1/32 inch gap may be left in bus bar joint to permit this alignment).



3. Install coupling plates into slots under top edges of the track housing. Bolt plates together.



4. Track sections can now be supported anywhere along the length of the section as is shown above. (Two hangers should be used per each track section).

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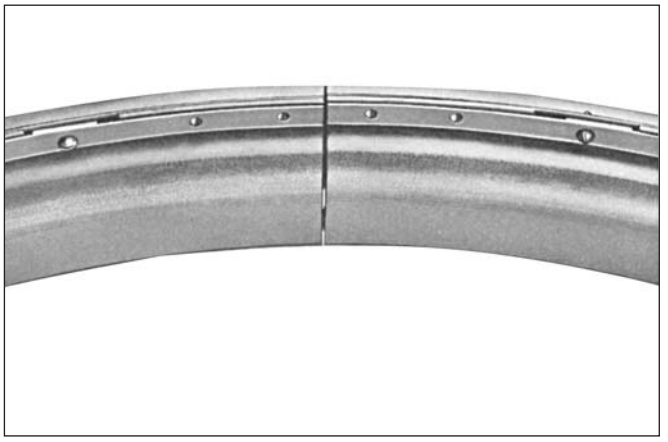
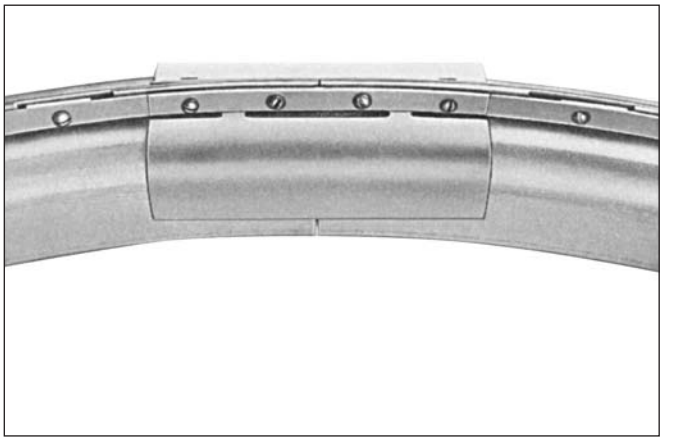
FM & FX Series (Multi-Conductor Trolley Service) – Installation Procedure

Joining Curved to Curved Sections or Straight to Curved Sections with Coupling Plate FX102

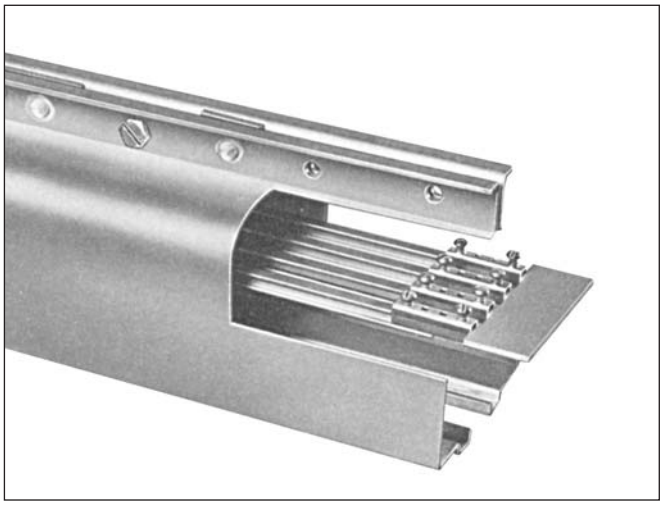


1. Connect track sections as outlined in steps 1 and 2 on page 39. Then install coupling plate (cat. no. FX102).

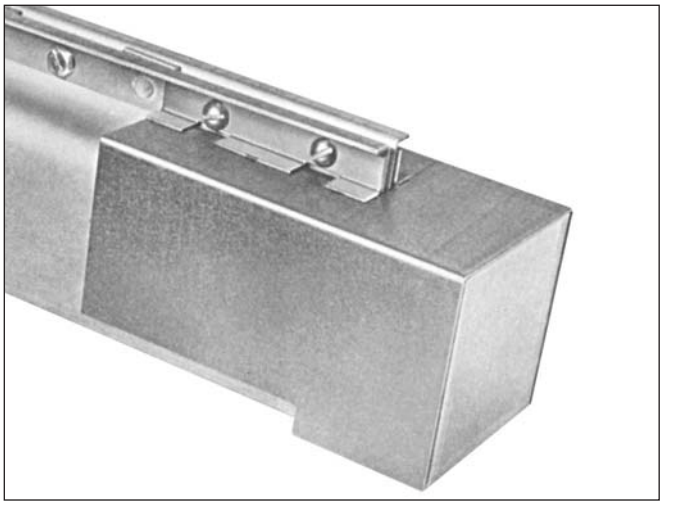


2. Align holes in coupling plate with holes in top of the track section. As bolts are tightened, coupling plate will conform to the shape of the track. Support curved track sections with Auxiliary Hanger FR140 and clevis support FR105, in holes provided in top of track casing.

Mounting Dead End Cap FM407 & FX507



1. Mount bus bar terminal spacer by inserting prongs into ends of bus bar connectors as far as they will go and tighten screws securely. Align side plates into slots under top edges of the track housing at end of track. Bring plates together and fasten bolts securely.



2. Place end cap in position with trolley stop at bottom. Insert and fasten the two mounting screws on each side.

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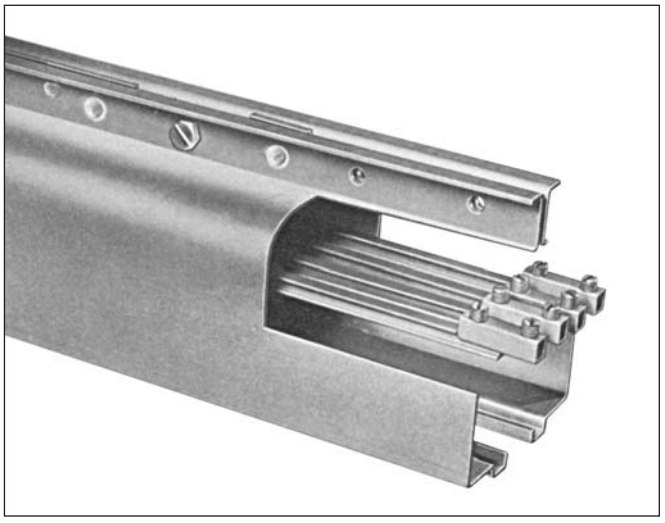
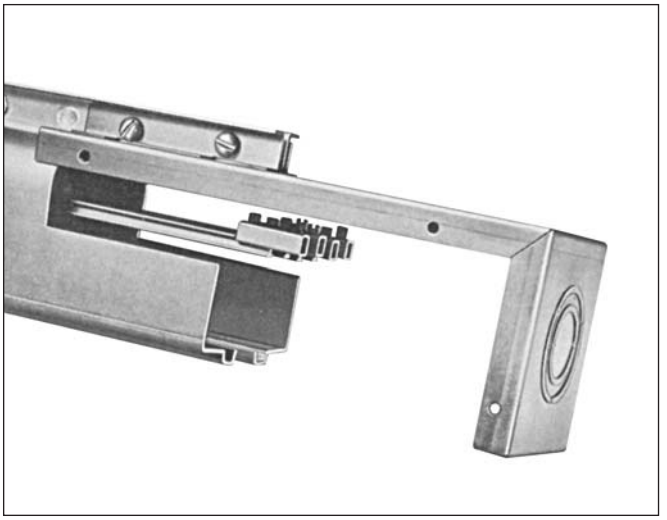
FM & FX Series (Multi-Conductor Trolley Service) – Installation Procedure

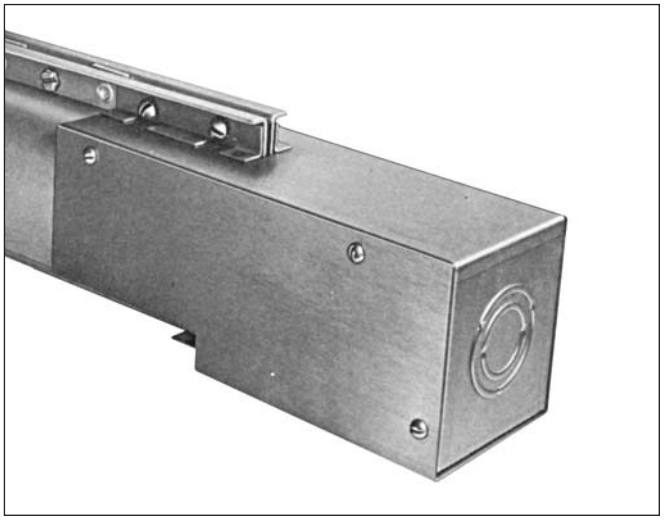
Mounting End Feed Box FM409 or FX509



1. If bus bar connectors are on end of track, remove and keep them for use with dead end cap at other end of the track run. Set terminal spacer onto bus bars. Slip end feed connectors (having half-length slot in bottom) onto ends of bus bars and tighten screws securely.



2. Fasten side plates into slots under top edges of track casing, tighten securely. Remove knockout in feedbox frame to provide proper size hole for conduit. Attach box frame to side plates.



3. Mount box cover. When ready to connect power, remove cover, bring in conduit through hole in box frame, make wire connection to the end feed terminal lugs and replace cover.

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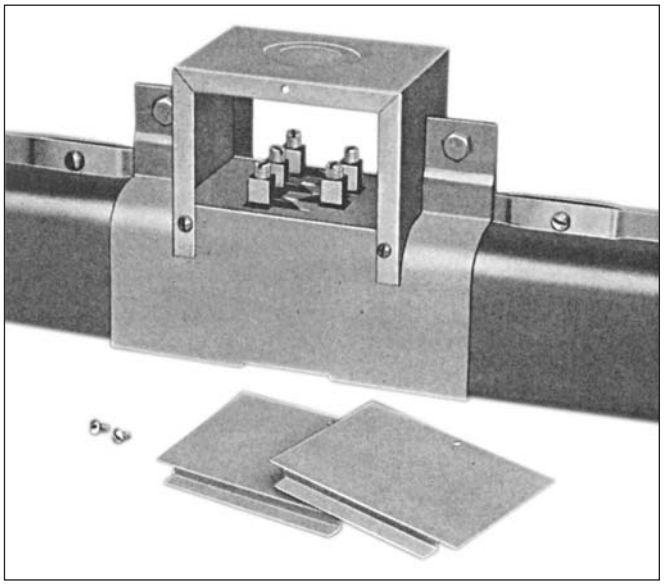
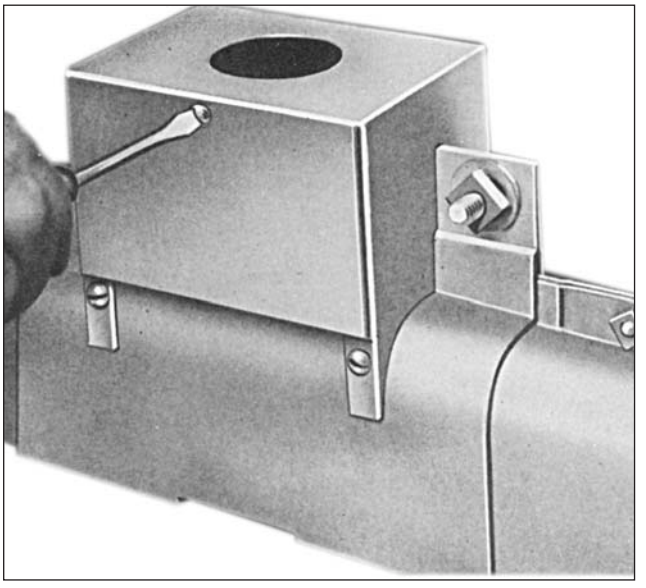
FM & FX Series (Multi-Conductor Trolley Service) – Installation Procedure

Installing Feed in Track Sections



1. Feed in track sections are connected to other track sections as outlined on page 39. A feed in terminal is built into a track section, ready to connect to the power supply. Simply remove side covers from box assembly for terminal connection. Remove knockout in feed box to provide proper size hole in conduit.



2. When ready to connect to power, bring in conduit through hole in box frame and make connection to terminal lugs. Replace side covers.

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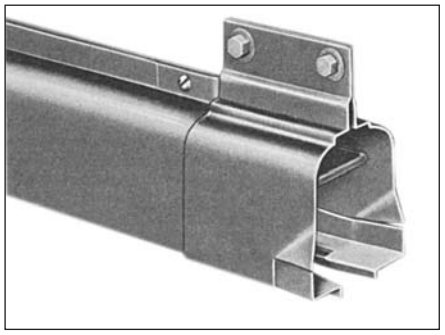
FM & FX Series (Multi-Conductor Trolley Service) – Installation Procedure

Installing Transfer Track



Feedrail "Multi-Conductor" transfer track sections are similar to Plain Track sections except that one or both ends are flared and have a tapered insulator serving as a guide for entrance of the trolleys.

On installations having transfer points, (*turntables, slide or tongue switches, etc.) the Transfer Track sections should be installed first so that proper gaps can be set. These gaps between Transfer Track sections should not exceed ¼ inch. (Transfer Track sections for use on turntables, slide or tongue switches, are not stock items but are manufactured specifically to conform to given dimensions.)

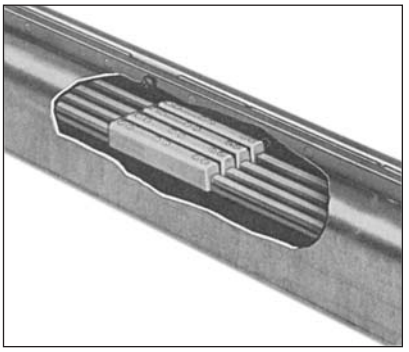
Where motor propelled hoists are used on runs which include transfer points, it is necessary to use two electrically inter-connected trolleys. The two trolleys must be spaced sufficiently so that current is maintained to one trolley while the other crosses the transfer point. Duplex Transfer Type Trolleys are designed particularly for this application.

Transfer Track sections at transfer points must be aligned accurately, both horizontally and vertically. They must be supported at the transfer ends by an FX-197 Transfer Point Hanger Set. (Hook bottoms of Transfer Point Hanger Set into slots in the under edges of the track housing. Bring the plates together and fasten to support with bolts as shown.)

In every case the mounting of Transfer Track sections should be designed to insure a rigid installation. They should be sway braced to maintain alignment.

Sections are installed and coupled to adjoining track sections as shown on page 39.

Installing Sectionalized Track



Sectionalizing Track sections are used to electrically isolate parts of a track run while permitting movement of the trolleys through that portion of the track.

All Sectionalizing Track sections are coupled in the same manner as Plain Track, shown on page 39.

Note: The standard sections described on page 33 have internal insulators of a size which do not prevent the interrupting of the current to the trolley. The current is not only maintained through the trolley but the circuits on both sides are electrically tied together through the trolley contacts as the trolley passes the sectionalizing insulator.

Other special sectionalizing track sections which are used in particular applications do break the current to the trolley. In these cases, two electrically connected trolleys must be used. They must be spaced sufficiently apart so that the contacts of one will be on the bus bars while the contacts of the other are passing the insulator. Unless connected in this manner, power will not be maintained to the trolley contacts as they cross the insulators and arcing at the trolley contacts will occur. Sectionalizing track sections must not be used as a circuit interrupting device.

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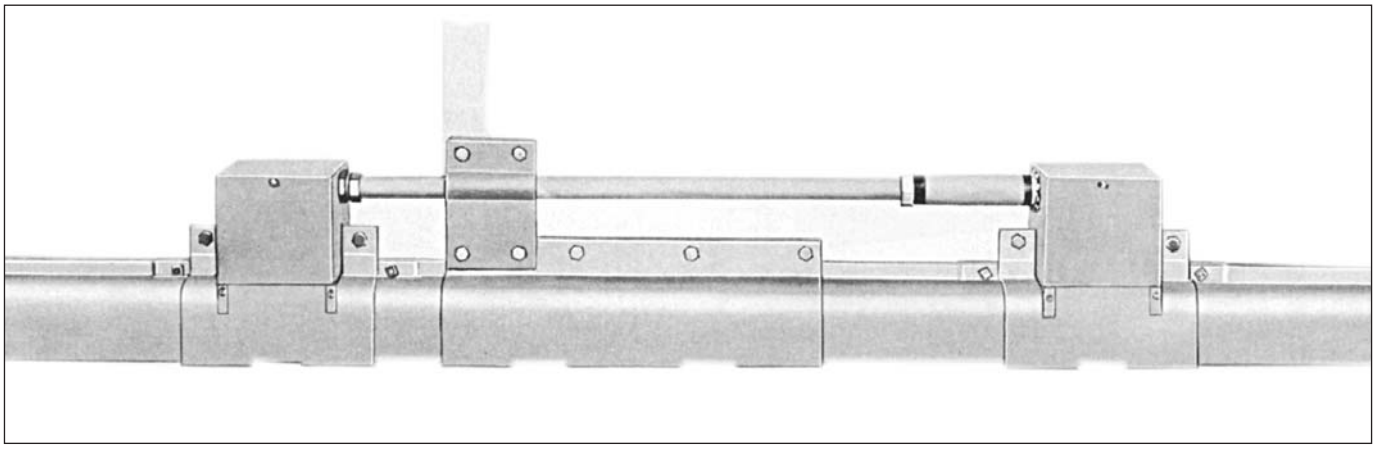
Feedrail®

FM & FX Series (Multi-Conductor Trolley Service) – Installation Procedure

Building Expansion Track



At least one Expansion Track section should be installed in each 400 ft. of track run to compensate for the cumulative differences in expansion and contraction between the steel casings and copper bus bars. Additional Expansion Track sections may be required if the installation is subjected to a wide range of temperature changes.

Expansion Track sections must be used wherever an installation is made across a building or structural expansion joint.

The standard 10' Expansion Track section is designed to provide 2" of expansion and 2" of contraction above and below the normal 10' length, at 75°F. At the time of installation, the length of the Expansion Track section must be set in accordance with the table to the right.

When used at points other than a building or structural expansion joint to compensate for unequal expansion or contraction between the steel track housing and copper bus bars, support the Expansion Track section by the coupling plates at each end and by the center support plates from suitable support brackets.

When used across a building expansion joint, center the Expansion Track section across the building expansion joint and support at each end from coupling plates and from the center support plates. Center support must be on the same side of the building expansion joint as the side of the expansion section stenciled "Stationary."

Length Settings for Standard 10' Expansion Track

Installation Temperature	Distance in Feet* 100	200	400
100° F	9' 11 3/16"	9' 11 5/8"	9' 11 1/4"
75° F	10'	10'	10'
50° F	10' 3/16"	10' 3/8"	10' 3/4"
25° F	10' 3/8"	10' 3/4"	10' 1 1/2"

For other temperatures and distances, consult factory.

*Distance represents:

(1) Footage between Expansion Track sections on installation having more than one Expansion Track section.

(2) Overall length of run on installation having only one Expansion Track section.

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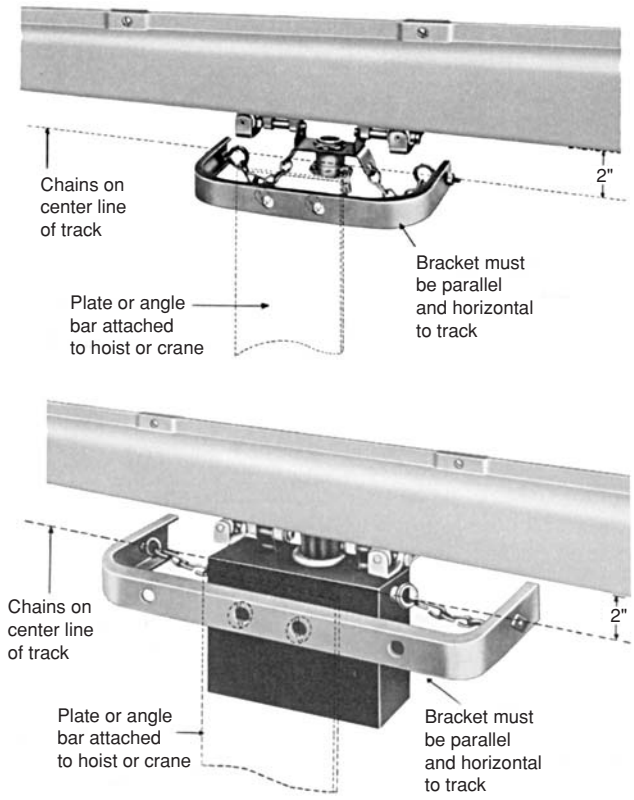
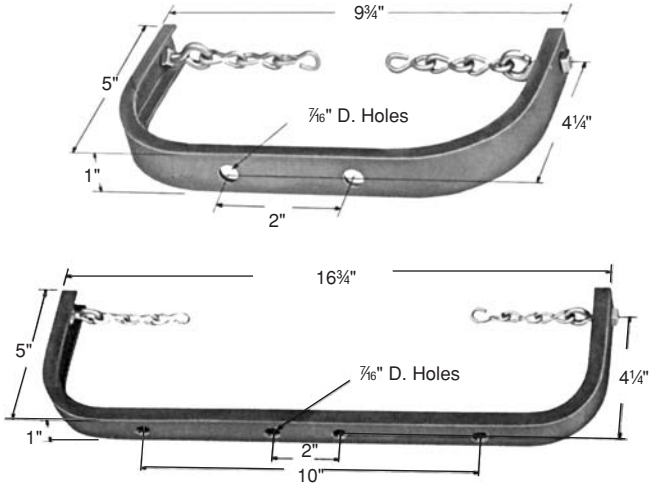
FM & FX Series (Multi-Conductor Trolley Service) – Trolley Installation

Mounting of Multi-Conductor Trolleys

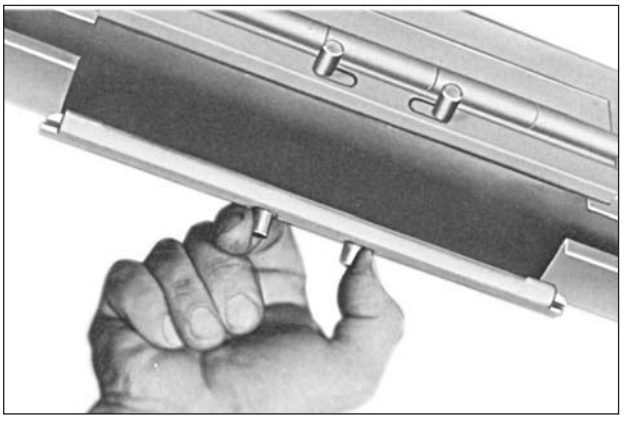

Chains on center line of track
2"
Bracket must be parallel and horizontal to track
Plate or angle bar attached to hoist or crane
Chains on center line of track
2"
Plate or angle bar attached to hoist or crane
Bracket must be parallel and horizontal to track

All trolleys must be pulled in such a manner that no strain is placed on the trolley by the pulling arrangement or electrical cable. A bracket and chain linkage, as shown, is recommended. Brackets must be attached to the hoist, crane bridge or other equipment so the chains are on the center line of the track and the bracket parallel to and 2" below the track. Flexible rubber covered cables must be used for electrical connection of each trolley.

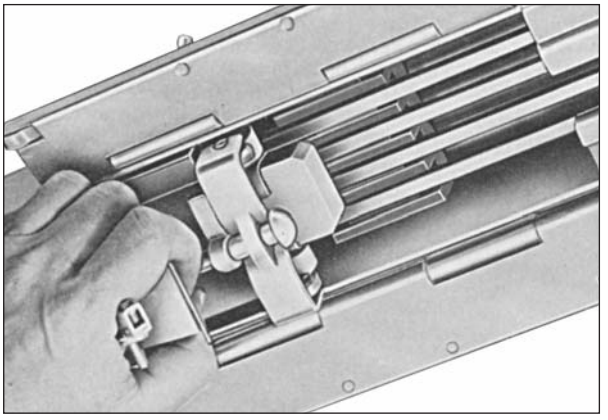
Mounting Dimensions of Trolley Pulling Brackets



Inserting Trolleys



1. Press pins together on underside of door section and swing door open.



2. Insert trolley as shown. If trolley hits polarizing stop, remove, reverse 180° and reinsert. Close track doors.

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Feedrail®

FM & FX Series (Multi-Conductor Trolley Service) – Installation Planning and Preventative Maintenance

Installation Planning

Before a Feedrail "Multi-Conductor" system can be planned or an estimate of the cost prepared, the electrical and mechanical requirements that the system must meet should be known. The following outlines list the basic data needed for all applications and the additional data required for various specific applications.

Basic For All

1. Describe in detail the purpose for which the Feedrail "Multi-Conductor" will be used. Will it be used with existing equipment?
2. How many conductors will be required?
3. What voltage and current is to be applied to each conductor? Where is the power source located?
4. Details about any special requirements or conditions which the installation must meet such as moisture, corrosive fumes, high or low temperatures, etc.

For Electric Cranes

5. Sketch giving number, location, length of crane runways and length of bridge. Show location of building expansion joints or expansion joints in the structure from which the Feedrail will be supported.
6. How many conductors will be required on each bridge run? How many for power? For control? How much current must each conductor carry?
7. What is the maximum travel speed of the bridge? of the hoist?
8. List of the crane's motors — main hoist, auxiliary hoist, bridge travel, trolley travel— giving the type (D.C., wound rotor, squirrel cage, etc.) of each motor and its horsepower and full-load ampere rating.

For Electric Hoists

5. Plan view sketch of the rail system on which the hoists will travel, giving the length of run, of straight sections, radii of any curves and dimensions of any switches. What is the minimum distance from Feedrail to monorail in order to clear hoist? Show location of building expansion joints or expansion joints in the structure from which the Feedrail will be supported.
6. How many hoists will be used and what is the horsepower and full load current rating of each? Include horsepower and full load current rating of travel motors of any of the hoists that are motor propelled. What are the maximum travel speeds?

For Moving Test Lines

5. Plan view sketch with dimensions showing the length of straight sections and radii of any curves, indicate the number of outlets required. If there are any sections along the run where test current will not be required, indicate their location and extent.
6. What type of equipment will be tested.
7. Give weight of units to be supported by the system.
8. What amperage range and what fusing arrangements will be required.?

For Production Machines

5. Plan view sketch with dimensions showing the location of the Feedrail system.
6. Indicate the number of conductors required and give voltage and amperage requirements of each. Give horsepower and full load current rating of each motor.
7. List any other equipment that will be powered by the Feedrail and give its full load current rating.

For Special Requirements

5. Plan view sketch with all dimensions which are necessary to make clear the location and extent of the Feedrail "Multi Conductor" system, and the radii of any curves it may contain. Show the location of the power source.
6. Full details about equipment which will be operated from the system, including

(a) Horsepower and full-load current rating of any electrical motors

(b) Weight of any equipment to be supported by the system.

(c) Fusing arrangements required.

(d) Number of outlets needed.

Engineering Cooperation

Working out the details of a Feedrail "Multi-Conductor" installation is not difficult once all the electrical and mechanical requirements have been definitely determined. We should like to suggest, however, that considerable time can be saved by enlisting the cooperation of Feedrail engineers from the start. They have helped work out the details of hundreds of installations and consequently have at their fingertips the answers to the questions and problems usually involved. Their cooperation is offered without obligation. Just ask the nearest representative to call — or send us complete information as outlined above with a request for recommendations.

Preventive Maintenance

At all times Feedrail equipment should be so protected and maintained as to be kept clean and dry.

Before the Feedrail system is placed in operation, it should be thoroughly checked for horizontal and vertical alignment, adequate track support and free movement of trolley travel throughout the entire track run. All track, bus bar and feed connections should be mechanically tight. The system should be checked for possible grounds or short circuits. Any paint, grease, or other foreign matter accumulated during construction should be removed from the bus bars, insulation and track interior. Blow out all dust and other loose particles from inside the track.

Expansion sections, when used, must be properly adjusted, located and supported in accordance with installation instructions. Check bus bars and casing for accurate alignment.

Feedrail is both an electrical and a moving mechanical system and therefore should be included as a part of your Preventive Maintenance Program.

Electrical Maintenance requires (1) keeping the system dry and clean to prevent electrical leakage or "shorts" across the insulation, and (2) maintaining electrical continuity by keeping bus bar contact surfaces clean and joints tight.

Mechanical Maintenance requires (1) preventing excessive wear and (2) replacing parts showing excessive wear.

The following Preventive Maintenance procedure, periodically performed, is recommended:

(a) Remove, thoroughly clean all trolleys and lubricate the wheels. Inspect contacts for excessive wear. Replace worn wheels and contacts.

(b) Clean bus bars with Feedrail Bus Bar Cleaner.

(c) Blow out all foreign particles which have accumulated inside the track.

(d) Check trolleys for free movement within the track.

(e) Check all track supports, track joints, bus bar and feed connections for tightness.

This procedure should be repeated at regular intervals, consistent with the severity of the operations and usage of the system. Plants operating two or three shifts will require more frequent inspection of the Feedrail® equipment.

Feedrail® is not normally recommended for installations subject to vibration, frequent electrical overload, corrosive fumes and other abnormal conditions. However, should such conditions exist, more frequent inspections and maintenance will be required.

Before additional electrical loads are added to the system it should be determined that sufficient capacity is available.

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Feedrail®

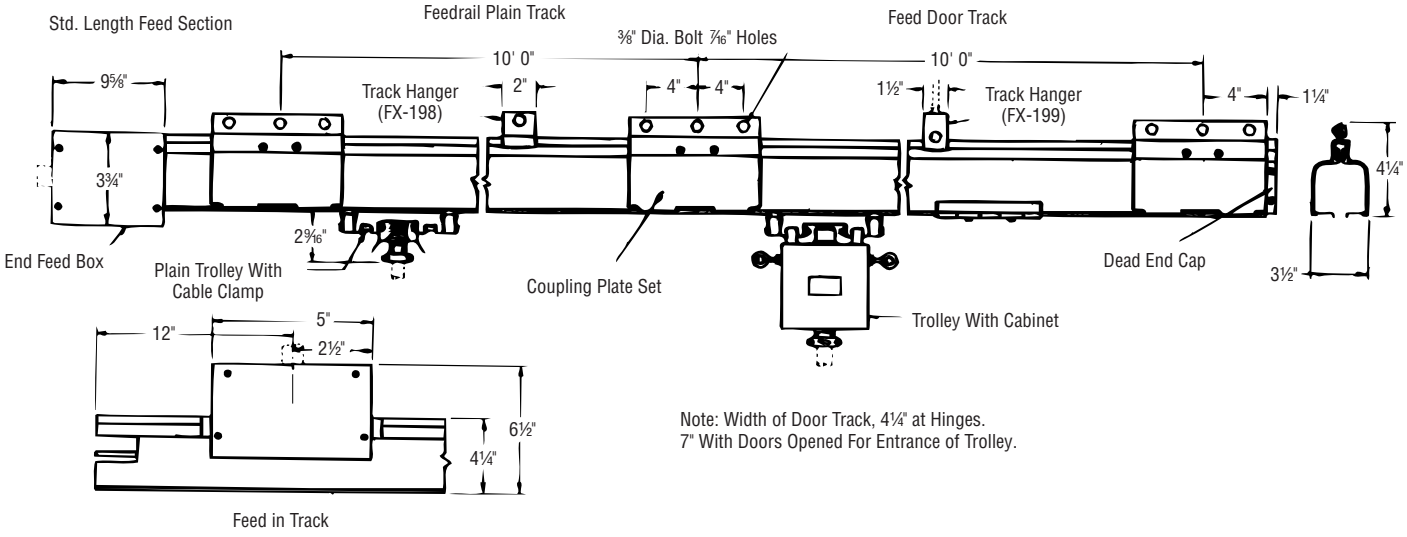
FM & FX Series (Multi-Conductor Trolley Service) – Basic Dimensions/Mounting Methods

Basic Dimensions

As an aid in planning mountings, the basic dimensions of the Feedrail 'Multi-Conductor' systems are shown below. These are offered as a guide only. For detailed or certified drawings, consult factory. See page 45 for mounting of trolley brackets.

Mounting Methods

Examples of the methods commonly used for mountiing Feedrail 'Multi-Conductor' systems track runs are shown below. These methods can be used in existing plants as well as in new buildings. Engineers and contractors will readily be able to devise other methods to suit special installations. In every case the mounting should be designed to insure a rigid installation in both horizontal and vertical alignment.



Note: Width of Door Track, 4¼" at Hinges.
7" With Doors Opened For Entrance of Trolley.

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Feedrail®

FM & FX Series (Multi-Conductor Trolley Service) – Typical Specification

FM & FX SERIES (Multi-Conductor Trolley Service)

The Trolley Busway System (Crane and Hoist Electrification System) shall be of metal enclosed type with internally track-supported trolleys as manufactured by:

Genuine Feedrail®
Thomas & Betts Corp.
Industrial Products

The System shall have a voltage rating (600)(300) Volts A.C., or (300)(250) Volts D.C. (2 pole) (3 pole) (4 pole) (5 pole), and a continuous current carrying capacity of 60 Amperes per Pole. (When used as a Crane and Hoist Electrification System, the System shall be rated at 60 Amperes continuous service and 90 Amperes intermittent service). The full current carrying capacity of the system shall be maintained throughout.

The System shall permit longitudinal movement of the housings and bus bars, independent of each other, in order to allow for unequal expansion and contraction as a result of temperature changes.

The System shall consist of standardized, interchangeable, Feedrail units — track sections, coupling sets, dead end caps, track hangers and power takeoff trolleys, as called for on the plans.

Track sections shall be two-piece, 13 gauge, brake pressed, zinc-coated sheet steel enclosures having a continuous slot in the bottom and a heavy double webbed rib in the top. Rolled or drawn copper bus bars, capable of carrying 60 Amperes per pole continuously without overheating, shall be mounted within the steel enclosure on arc-resistant insulators.

Door track sections shall include two hinged doors in the bottom for insertion and removal of trolleys. Door openings shall have a mechanical polarization to insure proper polarity of the trolleys.

Track supported trolleys shall be Cat. No._____ as listed in the Feedrail Catalog. They shall have a zinc-plated sheet steel chassis with metal wheels for support. Horizontal guide wheels shall run in the slot of the Feedrail track to prevent slewing and maintain alignment. Spring-loaded (roller) (or) (brush) contacts shall be mounted on arc-resistant insulation. When inserted in Feedrail track, the contacts shall align with the bus bars at all times.

Trolleys shall be mechanically polarized with respect to door track sections.

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Feedrail®

FR100 Series (Feedrail® '100') – Design & Construction 2 & 3 Pole Systems

Busway and Crane & Hoist Electrification System For Movable Trolley Service

Current Carrying Capacity

Track rating 100 Amperes (continuous); 150 Amperes (intermittent) Trolleys rated 20, 30, 40, 60 and 100 Amperes (continuous).

Voltage

600 Volts A.C. — 250 Volts D.C.

Track Supports

Malleable iron clevis type for tie rod. Fits all track accessories.

Track

Track sections consist of a 13-gauge zinc-coated steel housing and the enclosed current carrying bus bars and insulators, all factory assembled in convenient lengths ready for easy, fool-proof installation on the job. The lower horizontal portions of the housing serve as smooth, rigid runways for the trolleys.

'100' Track sections are available in various types — Plain, Door, Sectionalizing, Transfer, Curved and Expansion Track Sections.

Bus bars are of hard drawn copper. They are amply proportioned to carry the specified current of 100 amperes per pole continuously, 150 amperes per pole intermittently, without overheating.

Insulators are made of a high insulating and arc-resistant material. They are held in place on 9" centers by the casing.

Trolleys

Trolleys are available in fusible and non-fusible types.

Basically, all Feedrail '100' trolleys have a chassis-insulator-contact assembly. The chassis is heavy gauge steel. The trolley wheels and guide wheels are of the ball bearing type. A substantially proportioned insulator block combines the best insulating properties with high arc-resistance.

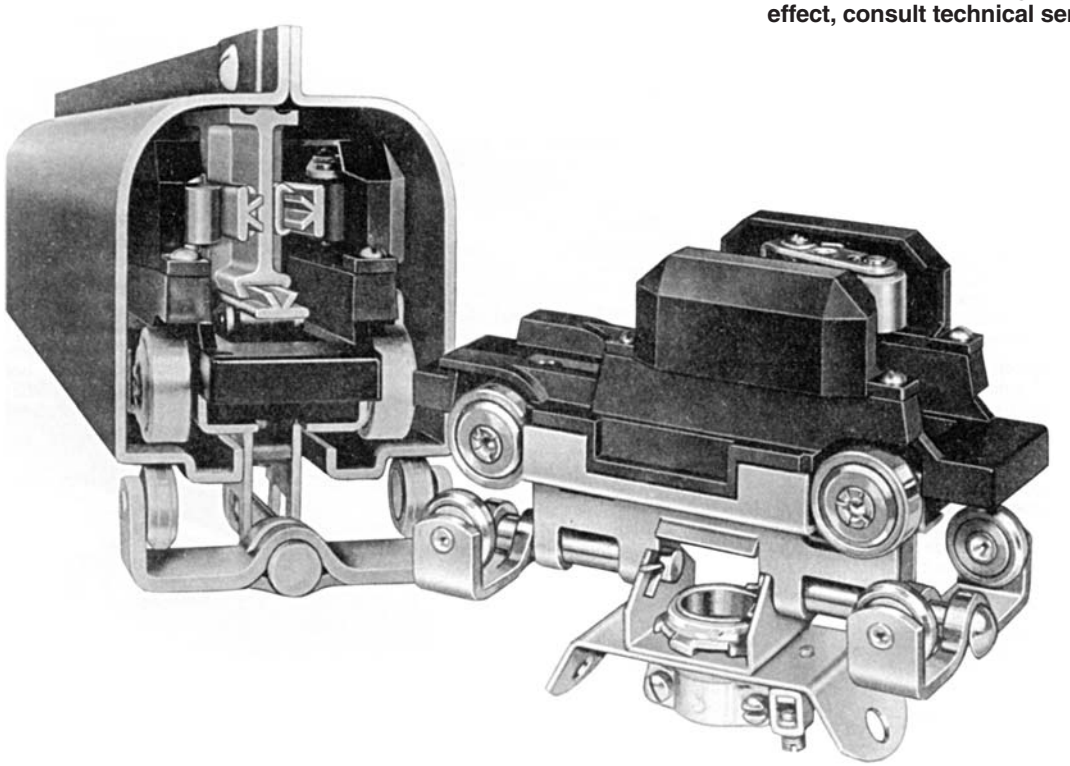
The trolleys for the '100' track system are furnished with various types of contacts. Bronze ROLLER contacts rated 20 Amperes, Copper Graphite BRUSH contacts rated 30 Amperes and silver Tungsten Brush contacts rated 30 and 100 Amperes.

All Feedrail trolleys have a polarizing tab on the chassis, which, operating in conjunction with a stop within the door track, permits insertion of the trolley one way only, thereby maintaining the trolley polarity as first wired. Provision for equipment grounding is included on all trolleys.

Feedrail '100' system Roller Contact Trolleys generally are for intermittent movement applications where speeds do not exceed 200 feet per minute. Feedrail '100' system Brush Contact Trolleys are for more frequent moving application such as on cranes and monorails where speeds do not exceed 350 feet per minute. Where continuous movement is required at these speeds, or where low voltage (under 50 volts) or low current (under 1 Amp.) is required, consult technical service group for recommendations. **Weights in excess of 40 pounds per trolley are not recommended.**

Feedrail® is listed by Underwriter's Laboratories, Inc. (U.L.) under BUSWAYS AND ASSOCIATED FITTINGS (File E11348) rated at 100 amperes continuous service and as a CRANE & HOIST ELECTRIFICATION SYSTEM (File E31188) rated at 100 amperes continuous service and 150 amperes intermittent service (1 minute OFF – 1 minute ON). Feedrail® is also listed by the Canadian Standards Association (C.S.A. under WIREWAYS AND BUSWAYS (File 7907).

For specific item listing currently in effect, consult technical service group.



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Feedrail®

FR100 Series (Feedrail® '100') – What It Is and What It Does

Feedrail '100' is the modern flexible "Trolley Busway System" and "Crane and Hoist Electrification System" for distributing electric power. Basically, it is an electrified track in which the current carrying components are enclosed in a protective steel housing. Smooth riding internally track-supported trolleys take off current and provide power outlets anywhere along the length of a run.

Superior to ordinary wiring methods in safety, convenience and adaptability, it provides a dependable power source for both stationary and moving equipment. Its uses in industry are myriad — from powering hoists and cranes to providing current for portable electric tools, from the electrification of moving test lines to the control of large machine tools and to supplying the current for electrically driven hangar doors.

The Feedrail '100' system is made up of standardized units, factory assembled for easy, fool-proof installation in the field. Its basic units include:

1. Track sections — straight, curved, door, expansions, sectionalizing and transfer sections — enclosing current carrying bus bars.

2. Accessories — coupling plates for joining track sections; feed boxes for connection of bus bars to the electric power supply; dead end caps for closing the ends of track runs.

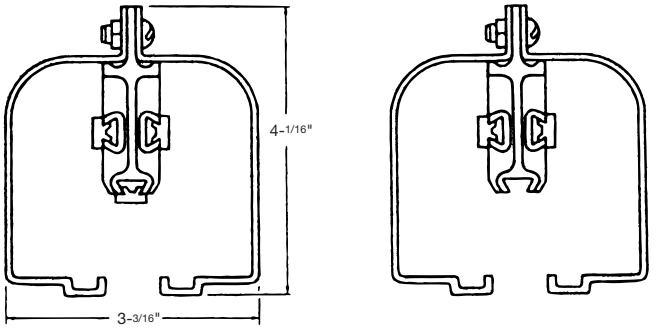
3. Trolleys — available in several types to meet a wide range of requirements including fusible and non-fusible types, with and without receptacles — internally track supported to provide current takeoff wherever desired.

Track sections can be supplied to form runs of any required length or contour. Hence it is "tailored-to-fit" the electric power requirements of industry, whether for modernizing an existing plant or for installation in a plant under construction.

Feedrail '100' operates with equal safety of any required level from ceiling to floor. While the majority of installations are overhead, numerous low-level installations have been made, including some along the base of production lines. All installations have proven entirely satisfactory in operation.

Designed primarily for indoor service in essentially dry locations.

FEEDRAIL '100' Bus Bar Arrangements



100 Amp – 3 Pole

100 Amp – 2 Pole

Center Bus Bar is Omitted for 2 Pole System

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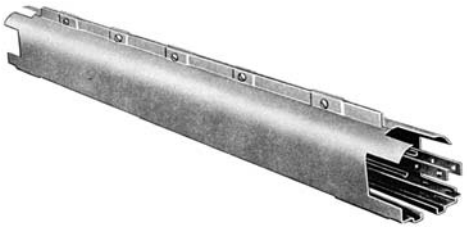
Feedrail®

FR100 Series (Feedrail® '100') – Track Sections



Continuous Rating:
100 Amperes - 600 Volts A.C. - 250 Volts D.C.
Intermittent Rating:
150 Amperes-600 Volts A.C.-250 Volts D.C.
(1 minute off, 1 minute on)

Plain Track

Cat. No.	Bus Bars	Poles	Length*	Weight
FR-200	Yes	2	10'	48 lbs.
FR-100	Yes	3	10'	51 lbs.
FR-130	No		10'	38 lbs.

*10 feet is standard length. Shorter lengths furnished on special order; minimum length 20 inches.

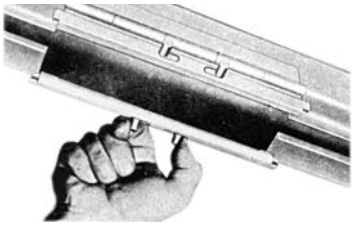
Continuous Rating:
100 Amperes - 600 Volts A.C. - 250 Volts D.C.
Intermittent Rating:
150 Amperes - 600 Volts A.C. - 250 Volts D.C.
(1 minute off, 1 minute on)

Door Track

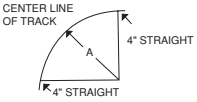
Door track sections are identical to plain track sections except with the addition of two hinged doors in the bottom for the insertion and removal of trolleys. When closed, the doors are securely locked and accurately aligned with the rest of the track to form an uninterrupted runway for the trolleys.

Cat. No.	Bus Bars	Poles	Length*	Weight
FR-201	Yes	2	10'	48 lbs.
FR-101	Yes	3	10'	51 lbs.
FR-131	No		10'	38 lbs.

*10 feet is standard length. Shorter lengths furnished on special order; minimum length 20 inches.



Hinged doors are easy to open or close. No tools are required. Pressing pins together against spring pressure disengages locking bolts. Door openings are polarized so trolleys can be inserted only one way.



Continuous Rating:
100 Amperes - 600 Volts A.C. - 250 Volts D.C.
Intermittent Rating:
150 Amperes - 600 Volts A.C. - 250 Volts D.C.
(1 minute off, 1 minute on)

Curved Track

Curved sections are of the same general specifications as plain track. All standard curved track sections are full 90° curves and have an additional 4" of straight track on each end for coupling. Special sections with different degrees of arc and radius from those listed below can be furnished to order. **Minimum radius, 2'6".** Maximum length per single curved section is 12'6".

90° CURVES

Sections complete with Bus Bars

Cat. No.	Poles	Weight	Cat. No.	Poles	Weight	Radius* (to center line)
FR-215	2	21 lbs	**FR-115**	3	24 lbs.	2'6"
FR-213	2	25 lbs	**FR-113**	3	28 lbs.	3'
FR-216	2	29 lbs	**FR-116**	3	32 lbs.	3'6"
FR-217	2	33 lbs	**FR-117**	3	36 lbs.	4'
FR-214	2	37 lbs	**FR-114**	3	40 lbs.	4'6"
FR-218	2	41 lbs	**FR-118**	3	44 lbs.	5'
FR-211	2	45 lbs	**FR-111**	3	48 lbs.	5'6"
FR-219	2	49 lbs	**FR-119**	3	52 lbs.	6'
FR-221	2	53 lbs	**FR-121**	3	56 lbs.	6'6"
FR-220	2	57 lbs	**FR-120**	3	60 lbs.	7'
FR-212	2	61 lbs	**FR-112**	3	64 lbs.	7'6"

Sections also available without bus bars. Consult technical service group.

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Feedrail®

FR100 Series (Feedrail® '100') – Track Sections

Continuous Rating:
100 Amperes - 600 Volts A.C. - 250 Volts D.C.
Intermittent Rating:
150 Amperes - 600 Volts A.C. - 250 Volts D.C.
(1 minute off, 1 minute on)

Sectionalizing Track

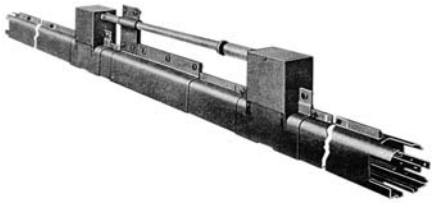
Sectionalizing Track sections isolate portions of a track run. They are the same as Plain Track sections except at the center of the track each bus bar is interrupted by an air gap. The bus bars are so formed and positioned by a special insulator that all trolleys smoothly cross the air gap while maintaining electrical continuity. The circuits on both sides of the gap are momentarily tied together through the trolley contacts as the trolley passes the air gap.

Special Sectionalizing Track sections are made that do interrupt the current to the trolley. When used, these require two electrically connected trolleys to maintain current through the trolley at all times. They must not be used as a circuit interrupting device. Consult technical service group for details.

Sections complete with Bus Bars

Cat. No.	Doors	Poles	Length*	Weight
FR-247	No	2	10'	48 lbs.
FR-248	Yes	2	10'	48 lbs.
FR-147	No	3	10'	51 lbs.
FR-148	Yes	3	10'	51 lbs.

*10 feet is standard length. Shorter lengths furnished on special order; minimum length 20 inches.



Continuous Rating:
100 Amperes - 600 Volts A.C. - 250 Volts D.C.
Intermittent Rating:
150 Amperes - 600 Volts A.C. - 250 Volts D.C.
(1 minute off, 1 minute on)

Expansion Track

While each standard Feedrail '100' plain or door track section allows for unequal expansion or contraction between the steel track housing and the copper bus bars, it cannot compensate for the total expansion or contraction on a long run without the use of Expansion Track sections.

At least one Expansion Track section should be installed in each 400 ft. of track run. Additional Expansion Track sections may be required if the installation is subjected to a wide range of temperature changes.

Expansion Track sections may also be necessary in enclosed loops or serpentine layouts, depending upon size, use and temperature conditions. Consult technical service group, furnishing installation requirements.

BUILDING EXPANSION TRACK

Building Expansion Track sections must be used wherever an installation is made across a building expansion joint, unless the Feedrail is so supported that building expansion will not affect Feedrail operation.

The standard 10' Building Expansion Track section is designed to provide 2" of expansion and 2" of contraction of the steel housing above and below the normal 10' length (at 75°F). If the temperature at the time of installation is other than 75°F, due compensation must be made according to the chart on page 64. The bus bars and track housing in this section telescope to provide a continuous surface for the trolley contacts and the ball bearing support wheels of the trolley. Enclosed flexible jumpers connect the bus bars and maintain full current carrying capacity across the joints.

BUS BAR EXPANSION TRACK

A Bus Bar Expansion Track section is also available which allows for expansion or contraction of the bus bars only where it is not necessary to compensate for steel expansion or contraction.

BUILDING EXPANSION TRACK SECTIONS

Sections complete with jumpers.

Cat. No.	Poles	Length	Weight
FR-255	2	10'	62 lbs.
FR-155	3	10'	65 lbs.

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Feedrail®

FR100 Series (Feedrail® '100') – Track Sections

Continuous Rating:
100 Amperes - 600 Volts A.C. - 250 Volts D.C.
Intermittent Rating:
150 Amperes - 600 Volts A.C. - 250 Volts D.C.
(1 minute off, 1 minute on)

Transfer Sections

Transfer sections are similar to plain track sections, except have one or two ends flared for use at points of transfer on slide switches, turn-tables, etc. (Transfer track sections for use on turn-tables, or slide switches are not stock items but are manufactured specifically to meet given dimensions). A nose insulator at the transfer point serves as a guide for the proper entrance of the trolley. Curved transfer sections with one or both ends flared, with or without doors, and with feed-in boxes installed can be furnished on special order.

Sections complete with bus bars and a center feed box FR-103

Two Ends Flared

Cat. No.	Door	Poles	Length*	Weight
FR-295	No	2	10'	48 lbs.
FR-296	Yes	2	10'	48 lbs.
FR-195	No	3	10'	51 lbs.
FR-196	Yes	3	10'	51 lbs.

Sections without bus bars.

One End Flared

Cat. No.	Door	Length*	Weight
FR-132	No	10'	38 lbs.
FR-133	Yes	10'	38 lbs.
FR-142	No	10'	38 lbs.
FR-143	Yes	10'	38 lbs.

Sections complete with bus bars.

One End Flared with Offset Bus Bar Ends

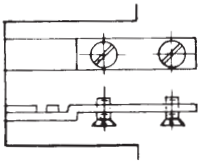
Cat. No.	Door	Poles	Length*	Weight
FR-285	No	2	10'	48 lbs.
FR-286	Yes	2	10'	48 lbs.
FR-185	No	2	10'	51 lbs.
FR-186	Yes	3	10'	51 lbs.

One End Flared with Plain Bus Bar Ends

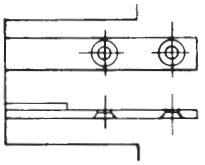
FR-287	No	2	10'	48 lbs.
FR-288	Yes	2	10'	48 lbs.
FR-187	No	3	10'	51 lbs.
FR-188	Yes	3	10'	51 lbs.

*10 feet is standard length. Shorter lengths furnished on request; minimum 20 inches. See page 61 for trolleys for use on transfer sections.

NOTES: When ordering transfer sections with one end flared for connection to existing track, indicate whether bus bars are to be connected to plain or offset bus bar ends as shown below.



OFFSET BUS BAR ENDS



PLAIN BUS BAR ENDS

Where motor propelled hoists are used on runs which include transfer points, it is necessary to use Duplex Transfer Type Trolleys as shown on page 61. Current is maintained to one trolley while the other crosses the transfer gap.

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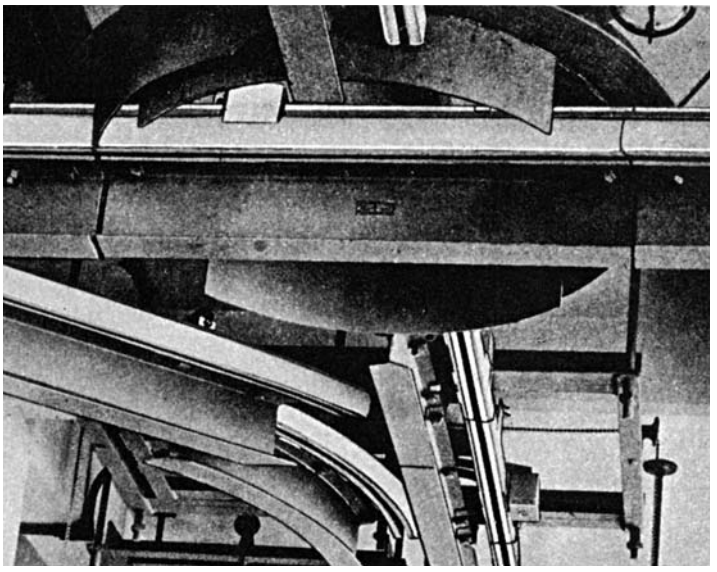
Feedrail®

FR100 Series (Feedrail® '100') – Track Switches Installations

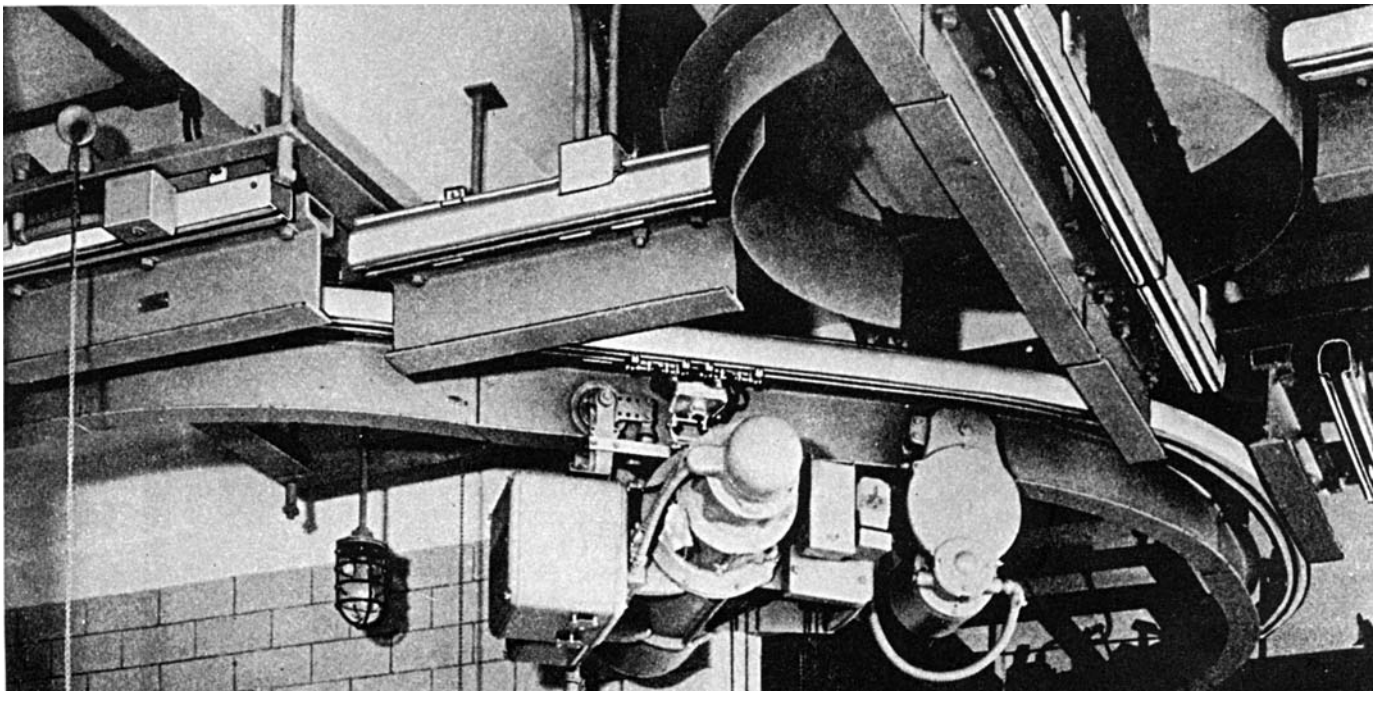


Typical of the many switch and turntable installations using Feedrail "100" are the illustrations on this page. The use of Feedrail provides a safe, fool-proof electrification system for the hoists at all points along the monorail runs.

Transfer sections for use with turntables, or slide switches are not stock items but are fabricated specifically to conform to given dimensions of the monorail manufacturer.

We should like to suggest that wherever any switch or turntable is involved, considerable time can be saved by enlisting the cooperation of Feedrail engineers at the start.

Monorail runs containing slide switches and a turntable equipped with Feedrail "100."



Same installation showing change in position of switches and turntable.

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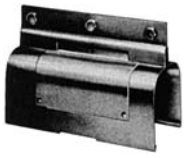
Feedrail®

FR100 Series (Feedrail® '100') – Track Accessories

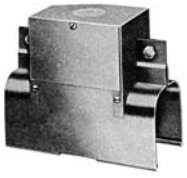


FR-102

FR-109

FR-105

FR-107



FR-103

FR-124

FR-140

Track Accessories

Cat. No.	Product	Wt.	Description
FR-102	Coupling Plate Set	2½ lb.	Set of two heavy gauge pressed steel plates serves as a coupling for track sections and as a hanger for attaching to supporting members. Removable snap on covers permit ready access to the bus bar joints.
FR-109	End Feed Box - Reversible	4¾ lb.	Set of two heavy gauge pressed steel plates and a two piece box through which electrical connection to the power supply can be made at the end of a track run. Reversible box permits conduit connection at top, bottom of end. Has concentric knockouts for ¾", 1", 1¼" or 1½" conduit. Also serves as a hanger for attaching track to supporting members. Complete with pressure type terminals accommodating No. 14 to 0 stranded wire.
FR-105	Clevis Support for	⅛ lb.	Malleable iron, with ⅜" cross bolt and ⅜" -16 tapped hole for tie rod. Fits all track accessories.
FR-107	Dead End Cap	2 lb.	Set of two heavy gauge pressed steel plates and box for closing the end of a track run. Also serves as a hanger for attaching to supporting members. Includes a trolley stop.
FR-103	Center Feed Box	4 lbs.	Set of two heavy gauge pressed steel plates, box and covers, through which electrical connection to the power supply is made between any two track sections. Serves as a track coupling and hanger for attaching supporting members. Has concentric knockouts for ¾", 1", 1¼" or 1½" conduit in the top. Complete with pressure type terminals accommodating No. 14 to 0 stranded wire.
FR-124	Transfer Point Hanger Set	¾ lb.	Set of two heavy gauge pressed steel plates formed to match flared ends of transfer sections. Use as hanger for attaching to supporting members at open end of transfer track sections.
FR-140	Auxiliary Track Hanger Set	⅜ lb.	Heavy gauge pressed steel plates for intermediate mounting of track sections to supporting members. Fits over top of straight track housing rib at any of the insulator bolting points. Complete with ⅜" mounting bolt.

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Feedrail®

FR100 Series (Feedrail® '100') – Trolley Design and Construction

The same efficient engineering and clean-cut construction, which is a hallmark of the entire Feedrail system, is evident in the internally track supported "100" trolleys. They are available either non-fusible or fusible, with or without receptacles, fully assembled ready for insertion in the track. Fusible trolleys and trolleys with receptacles are factory wired. Other trolleys are furnished with crimp-style lugs.

Basically, all Feedrail "100" trolleys have the chassis-insulator-contact assembly illustrated below. The chassis is of one-piece heavy gauge steel. It is equipped with ball-bearing wheels for supports; horizontally mounted ball-bearing guide wheels running in the slot of the track to prevent slewing, and ball-bearing wheels on pivoted arms of the undercarriage to control upthrust. This wheel combination assures smooth easy running trolleys.

The insulator-contact assembly consists of a substantially proportioned hot-molded, non-tracking, arc quenching insulator block on which arms with contact brushes (or rollers) are mounted and held in true alignment with the track bus bars. Torsion springs, one on each arm, keep the brush (or roller) in contact with the bus bar. The body is entirely closed between the contact side and the chassis to prevent any foreign material entering between the wiring terminals and chassis. The contacts are easily replaceable from the top without requiring removal of the body from the chassis or disturbing the existing wiring of the trolley.

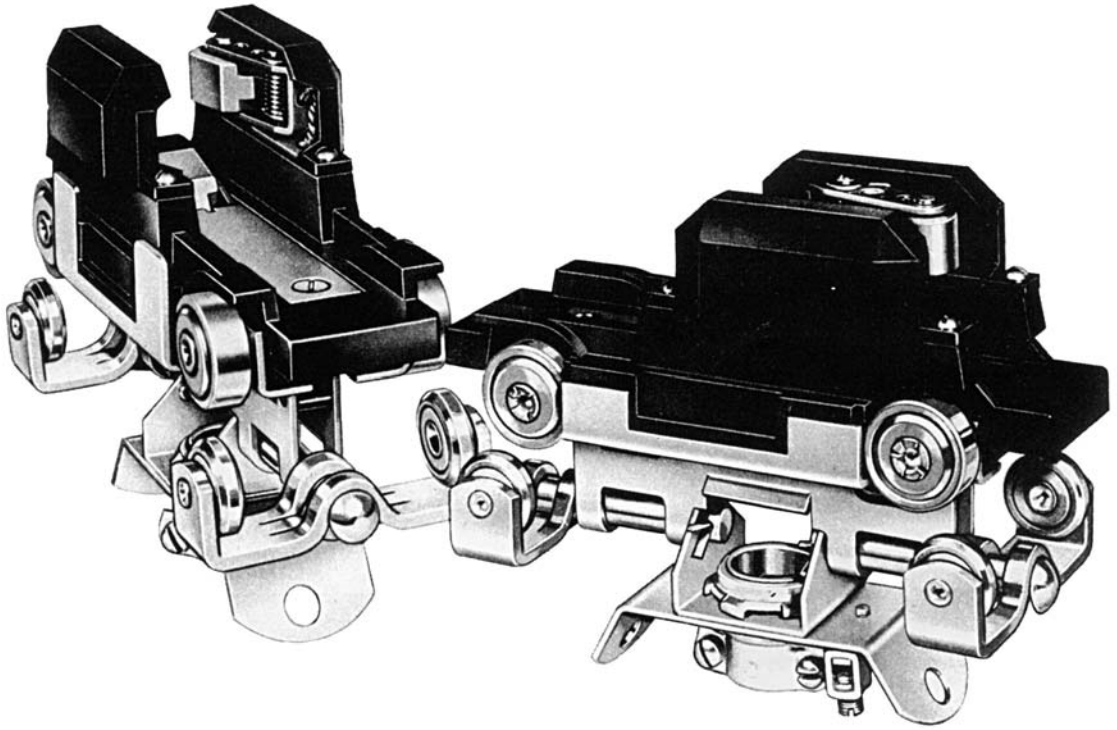
Feedrial "100" trolleys are furnished with two types of contacts: Copper Graphite BRUSH contacts rated 30 Amperes, and Bronze ROLLER contacts rated 20 Amperes.

The Special Service trolleys illustrated on page 60 has silver-tungsten contacts. Other trolleys can be furnished with silver-tungsten contacts on request.

All Feedrail "100" trolleys have a polarizing tab on the chassis which, operating in conjunction with a stop within the door track, permits insertion of the trolley one way only, thereby maintaining the trolley polarity as first wired. Provision for equipment grounding is included on all trolleys.

The standard Feedrail "100" non-cabinet trolleys are equipped with trolley brackets to facilitate pulling by means of tow chains. Crane and Hoist and Transfer trolleys have an additional pulling bracket and chain linkage for attachment to the hoist or to the crane bridge. Standard Feedrail cabinets of various types are available for suspension from the trolley chassis. A simple suspension design makes it possible to remove and mount cabinets in a matter of minutes should a change to another type become desirable. **Weights in excess of 40 pounds per trolley are not recommended.**

Feedrail "100" Roller Contact trolleys generally are for intermittent movement applications where speeds do not exceed 200 feet per minute. Feedrail "100" Brush Contact trolleys are for more frequent moving applications such as on cranes and monorails where speeds do not exceed 350 feet per minute. Where continuous movement is required at these speeds, or at very slow speeds, or low voltage (under 50 volts) or low current (under 1 Amp) consult technical service group for recommendations.



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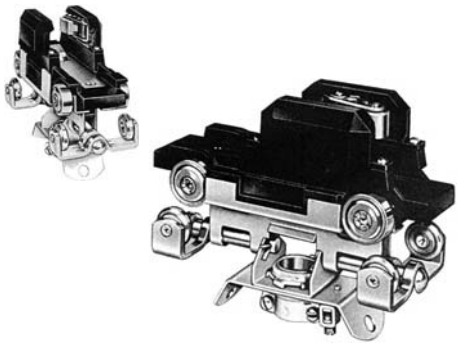
FR100 Series (Feedrail® '100') – Trolleys

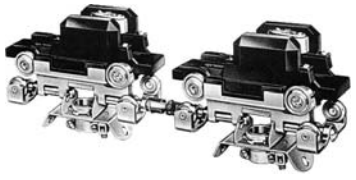


600 Volts A.C. - 250 Volts D.C.

Single Trolleys – Non-Fusible

These trolleys are not for use on transfer track.

Cat. No.	Amps	Poles	Type of Contact	Weight
FR-734	20	2	Roller	2½ lbs.
FR-790	30	2	Brush	2⅝ lbs.
FR-724	20	3	Roller	2⅝ lbs.
FR-780	30	3	Brush	2¾ lbs.



600 Volts A.C. - 250 Volts D.C.

Duplex Trolleys – Non-Fusible

For use where higher amperage capacity is needed. These trolleys are not for use on transfer track.

Cat. No.	Amps	Poles	Type of Contact	Weight
FR-737	40	2	Roller	5 lbs.
FR-792	60	2	Brush	5¼ lbs.
FR-727	40	3	Roller	5¼ lbs.
FR-782	60	3	Brush	5½ lbs.

Notes: Amperage ratings of the above trolleys are maximum under non-inductive loads.

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Feedrail®

FR100 Series (Feedrail® '100') – Trolleys

Trolleys with Hanger Cabinets

Non-Fusible, without receptacle, with cable clamp

Cat. No.	Poles	Voltages	Amperes	Type of Contact	Net Wt.
FR-735	2	600 A.C.-250 D.C.	20	Roller	4½ lbs.
FR-795	2	600 A.C.-250 D.C.	30	Brush	4⅝ lbs.
FR-705	3	600 A.C.-250 D.C.	20	Roller	4⅝ lbs.
FR-785	3	600 A.C.-250 D.C.	30	Brush	4¾ lbs.

Trolleys with Beveled Cabinets

Non-Fusible, with 20 Ampere Receptacle (see Note C)

Cat. No.	Poles	Voltages	Amperes	Type of Contact	Net Wt.
FR-738	2	600 A.C.-250 D.C.	20	Roller	7 lbs.
FR-762	2	600 A.C.-250 D.C.	20	Brush	7⅛ lbs.

Non-Fusible, with 30 Ampere Receptacle (see Note C)

Cat. No.	Poles	Voltages	Amperes	Type of Contact	Net Wt.
FR-812	3	600 A.C.-250 D.C.	20	Roller	7⅜ lbs.
FR-872	3	600 A.C.-250 D.C.	30	Brush	7½ lbs.

Fusible, with 20 Ampere Receptacle (see Note C)

Cat. No.	Poles	Voltages	Amperes	Type of Contact	Type of Fuse Block	Net Wt.
FR-730	2	250 A.C.-250 D.C.	20	Roller	Dead Front	8½ lbs.
FR-757	2	250 A.C.-250 D.C.	20	Brush	Dead Front	8½ lbs.
FR-710	3	250 A.C.-250 D.C.	20	Roller	Dead Front	9⅛ lbs.
FR-770	3	250 A.C.-250 D.C.	20	Brush	Dead Front	9¼ lbs.

Fusible, with 30 Ampere Receptacle (see Note C)

FR-810	3	250 A.C.-250 D.C.	20	Roller	Dead Front	9⅜ lbs.
FR-870	3	250 A.C.-250 D.C.	30	Brush	Dead Front	9½ lbs.

Trolleys listed on this page are not for use with Transfer Track.

Fusible trolleys take national electrical code standard cartridge fuses of the voltage rating of the trolley. (Fuses not included).

a) Cabinet type trolleys (except 100 Ampere Special Service Trolleys) can be furnished in duplex type. See page 60. To order add letter "D" after catalog number of similar catalog listed trolley desired - for example Cat. FR-785-D.

b) Ampere ratings shown are maximum under non-inductive load. The rating of "D" type trolleys when furnished with receptacles, or fuse blocks, is limited to the rating of those devices.

c) Trolleys with receptacles have RUSSELLSTOLL receptacles of the ratings indicated. Plugs to fit these receptacles are shown on page 62.

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FR100 Series (Feedrail® '100') – Trolleys

Trolleys with Box Cabinets

Non-Fusible, without receptacle, with cable clamp

Cat. No.	Poles	Voltages	Amperes	Type of Contact	Net Wt.
FR-731	2	600 A.C.-250 D.C.	20	Roller	6 lbs.
FR-794	2	600 A.C.-250 D.C.	30	Brush	6⅛ lbs.
FR-741	3	600 A.C.-250 D.C.	20	Roller	6⅛ lbs.
FR-784	3	600 A.C.-250 D.C.	30	Brush	6¼ lbs.

Fusible, without receptacle, with cable clamp

Cat. No.	Poles	Voltages	Amperes	Type of Contact	Type of Fuse Block	Net Wt.
FR-729	2	250 A.C.-250 D.C.	20	Roller	Open Front	6⅝ lbs.
FR-796	2	250 A.C.-250 D.C.	30	Brush	Open Front	6⅝ lbs.
FR-709	3	250 A.C.-250 D.C.	20	Roller	Open Front	6⅝ lbs.
FR-786	3	250 A.C.-250 D.C.	30	Brush	Open Front	6⅝ lbs.
FR-723	2	600 A.C.-250 D.C.	20	Roller	Open Front	12 lbs.
FR-798	2	600 A.C.-250 D.C.	30	Brush	Open Front	12 lbs.
FR-743	3	600 A.C.-250 D.C.	20	Roller	Open Front	14 lbs.
FR-788	3	600 A.C.-250 D.C.	30	Brush	Open Front	14¼ lbs.
FR-739	2	250 A.C.-250 D.C.	20	Roller	Dead Front	7½ lbs.
FR-797	2	250 A.C.-250 D.C.	30	Brush	Dead Front	7½ lbs.
FR-719	3	250 A.C.-250 D.C.	20	Roller	Dead Front	8½ lbs.
FR-787	3	250 A.C.-250 D.C.	30	Brush	Dead Front	8½ lbs.

Fusible, with 20 Ampere Receptacle (see Note C)

FR-732	2	600 A.C.-250 D.C.	20	Roller	Open Front	12 lbs.
FR-799	2	600 A.C.-250 D.C.	20	Brush	Open Front	12 lbs.
FR-702	3	600 A.C.-250 D.C.	20	Roller	Open Front	14 lbs.
FR-789	3	600 A.C.-250 D.C.	20	Brush	Open Front	14¼ lbs.

Fusible, with 30 Ampere Receptacle (see Note C)

FR-802	3	600 A.C.-250 D.C.	20	Roller	Open Front	14¼ lbs.
FR-889	3	600 A.C.-250 D.C.	30	Brush	Open Front	14½ lbs.

Trolleys listed on this page are not for use with Transfer Track.

Fusible trolleys take national electrical code standard cartridge fuses of the voltage rating of the trolley. (Fuses not included).

a) Cabinet type trolleys (except 100 Ampere Special Service Trolleys) can be furnished in duplex type. See page 60. To order add letter "D" after catalog number of similar catalog listed trolley desired - for example Cat. FR-784-D.

b) Ampere ratings shown are maximum under non-inductive load. The rating of "D" type trolleys when furnished with receptacles, or fuse blocks, is limited to the rating of those devices.

c) Trolleys with receptacles have RUSSELLSTOLL receptacles of the ratings indicated. Plugs to fit these receptacles are shown on page 62.

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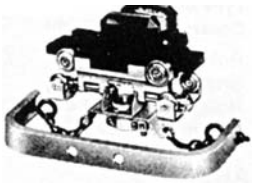
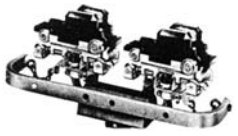
Feedrail®

FR100 Series (Feedrail® '100') - Trolleys





Crane and Hoist Trolleys

Single Trolleys - Non-Fusible. Not for use with Transfer Track.

Cat. No.	Poles	Amperes	Voltages 220 A.C.	440 A.C.	550 A.C.	230 D.C.	Type of Contact	Net Wt. (lbs.)
FR-766	2	30	4 HP			5 HP	Brush	3⅝
FR-706	3	30	7½ HP	15 HP	20 HP		Brush	3¾

Single Trolleys - Non-Fusible, with receptacle†
Wired complete with 20 or 30 ampere receptacle. Not for use with Transfer Track.

Cat. No.	Poles	Amperes	Voltages 220 A.C.	440 A.C.	550 A.C.	230 D.C.	Type of Contact	Net Wt. (lbs.)
FR-766-8005	2	20	3 HP			4 HP	Brush	6
FR-766-8305	2	30	4 HP			5 HP	Brush	6-1/4
FR-706-8004	3	20	5 HP	10 HP	15 HP		Brush	6-1/4
FR-706-8304	3	30	7½ HP	15 HP	20 HP		Brush	6-1/2

Duplex Trolleys - Non-Fusible, without receptacle
For use where higher amperage is needed. Not for use with Transfer Track.

Cat. No.	Poles	Amperes	Voltages 220 A.C.	440 A.C.	550 A.C.	230 D.C.	Type of Contact	Net Wt. (lbs.)
FR-766-D	2	60	8 HP			10-HP	Brush	8½
FR-706-D	3	60	15 HP	30-HP	40-HP		Brush	9

***HORSEPOWER RATINGS** are for induction type and squirrel cage motors with usual speeds and normal torque characteristics. HORSEPOWER RATINGS do not apply for Wound Rotor Motors with secondary speed control nor for Motors with especially low speeds or high torque characteristics. Consult technical service group for recommendations.*

***TROLLEYS** and RECEPTACLES are not intended for opening and closing circuits under load.*

***TROLLEYS** with silver tungsten brush contacts will be provided when so ordered.*

Ampere ratings shown are maximum under non-inductive load.

†See page 62 for Ever-Lok Plugs for use in connecting these trolleys.

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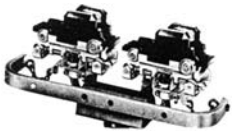
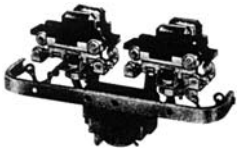
Feedrail®

FR100 Series (Feedrail® '100') - Trolleys





***HORSEPOWER RATINGS** are for induction type and squirrel cage motors with usual speeds and normal torque characteristics. HORSEPOWER RATINGS do not apply for Wound Rotor Motors with secondary speed control nor for Motors with especially low speeds or high torque characteristics. Consult factory for recommendations.*

***TROLLEYS** and RECEPTACLES are not intended for opening and closing circuits under load.*

***TROLLEYS** with silver tungsten brush contacts will be provided when so ordered.*

***Ampere** ratings shown are maximum under non-inductive lead.*

†See page 62 for Ever-Lok Plugs for use in connecting these trolleys.

Transfer Type Trolleys

Transfer type trolleys are especially designed to facilitate crossing of gaps between crane bridges and spur runs or between slide switch sections and the main run. Where motor propelled hoists are used on runs which include transfer points, duplex type transfer trolleys must be used to insure continuous current while crossing the transfer points.

Single Trolleys — Transfer Type — Non-Fusible

For use on track runs which include transfer gaps.

Cat. No.	Poles	Amperes	Voltages				Type of Contact	Net Wt. (lbs.)
			220 A.C.	440 A.C.	550 A.C.	230 D.C.		
FR-764	2	30	4 HP			5 HP	Brush	3¾
FR-774	3	30	7½ HP	15 HP	20 HP		Brush	3⅞

Single Trolleys -Transfer Type — Non-Fusible, with Receptacle†
Quick disconnect trolleys for use on track runs which include transfer gaps. Wired complete with Ever-Lok 20 or 30 Ampere Receptacle.

Cat. No.	Poles	Amperes	Voltages				Type of Contact	Net Wt. (lbs.)
			220 A.C.	440 A.C.	550 A.C.	230 D.C.		
FR-764-8005	2	20	3 HP			4 HP	Brush	6
FR-764-8305	2	30	4 HP			5 HP	Brush	6⅛
FR-774-8004	3	20	5 HP	10 HP	15 HP		Brush	6¼
FR-774-8304	3	30	7½ HP	15 HP	20 HP		Brush	6½

Duplex Trolleys -Transfer Type, Non-Fusible
For use on track runs which include transfer gaps where current must be maintained while crossing transfer points. These trolleys must be used on motor propelled hoists to provide continuous current while crossing transfer points.

Cat. No.	Poles	Amperes	Voltages				Type of Contact	Net Wt. (lbs.)
			220 A.C.	440 A.C.	550 A.C.	230 D.C.		
FR-764-D	2	30	4 HP			5 HP	Brush	9⅜
FR-774-D	3	30	7½ HP	15 HP	20 HP		Brush	9¾

Duplex Trolleys -Transfer Type — Non-Fusible, with Receptacle†
Wired complete with Ever-Lok 20 or 30 Ampere Receptacle

Cat. No.	Poles	Amperes	Voltages				Type of Contact	Net Wt. (lbs.)
			220 A.C.	440 A.C.	550 A.C.	230 D.C.		
FR-764-D-8005	2	20	3 HP			4 HP	Brush	9⅞
FR-764-D-8305	2	30	4 HP			5 HP	Brush	10⅛
FR-774-D-8004	3	20	5 HP	10 HP	15 HP		Brush	10½
FR-774-D-8304	3	30	7½ HP	15 HP	20 HP		Brush	10¾

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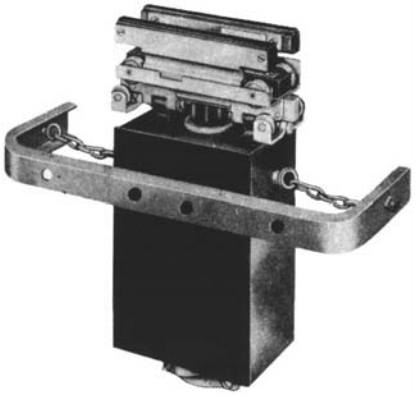
Feedrail®

FR100 Series (Feedrail® '100') – Trolleys, Cleaning Tools, & Wiring Devices



100 Ampere Special Service Trolleys

For use on straight track only without transfer gaps

Typical of Feedrail's advanced engineering design, this single unit trolley combines all the essential features of the standard trolley series with the special requirements of high power full rated take-off. It is ideal for heavy tonnage traveling cranes, hoists and similar equipment.

These trolleys differ in construction details from the general trolley description appearing on page 56 in that the contact assembly consists of three substantially proportioned mechanically strong arc-resisting blocks on which silver tungsten brush contacts, one per pole, are mounted and kept in continuous contact with the bus bars by individual compression springs. Solderless type pressure connectors are within a heavy gauge sheet steel terminal box. A cable clamp is provided as a pulling bracket with chain linkage to make the positive attachment to the equipment being powered.

Cat. No.	Poles	Amperes*	Voltages (600 Volt AC.- 250 Volt DC.) 220 A.C.	440 A.C.	550 A.C.	230 D.C.	Net Wt. (lbs.)
FR-65	2	100	15 HP	–	–	20 HP	11
FR-75	3	100	30 HP	60 HP	76 HP	–	11⅝

*Maximum amperage under non-inductive loads.

FR-76

FR-77

Cleaning Tools

Cat. No.	Product	Wt.	Description
FR-76	Dust Remover with Bristle Brushes	2⅜ lbs.	With these trolley mounted tools, bus bars can be quickly cleaned. They are inserted in the door track openings and pushed back and forth. All bus bars are cleaned at the same time. For use on all track sections.
FR-77	Bus Bar Cleaner with Cleaning Stones	2⅝ lbs.	

Ever-Lok® Wiring Devices

Used for connecting tools and other equipment to Feedrail trolleys. These units are available in various styles – fused and non-fused self-locking plugs, receptacles and connectors – to meet the varied demands of industry. Illustrated here are those most frequently used with Feedrail equipment. All units are polarized to prevent improper connection.

Cat. No.	Amperes	Volts	Wires & Poles (2)	Net Wt.
Female Receptacle (Unfused)				
8005	20	600 A.C. - 250 D.C. (b)	2W-3P	¾
8305	30	600 A.C. - 250 D.C. (b)	2W-3P	⅞
8004	20	600 A.C. - 250 D.C. (b)	3W-4P	¾
8304	30	600 A.C. - 250 D.C. (b)	3W-4P	⅞
Female Connector (Unfused)				
8025	20	600 A.C. - 250 D.C. (b)	2W-3P	½
8325S	30	600 A.C. - 250 D.C. (b)	2W-3P	⅝
8024	20	600 A.C. - 250 D.C. (b)	3W-4P	⅝
8324S	30	600 A.C. - 250 D.C. (b)	3W-4P	¾
Male Plug (Unfused)				
8015	20	600 A.C. - 250 D.C. (b)	2W-3P	⅝
8315S	30	600 A.C. - 250 D.C. (b)	2W-3P	¾
8014	20	600 A.C. - 250 D.C. (b)	3W-4P	⅝
8314S	30	600 A.C. - 250 D.C. (b)	3W-4P	¾
Male Plug (Unfused)				
8417	60	480 A.C. -250 D.C.	2W-3P	2½
8418	60	480 A.C. -250 D.C.	3W-4P	2⅝

(a) Number of poles includes pole for equipment grounding

(b) Fusible plugs have maximum rating of 250 volts, A.C. or D.C. Fuses are not included

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Feedrail®

FR100 Series (Feedrail® '100') – Installation Procedure

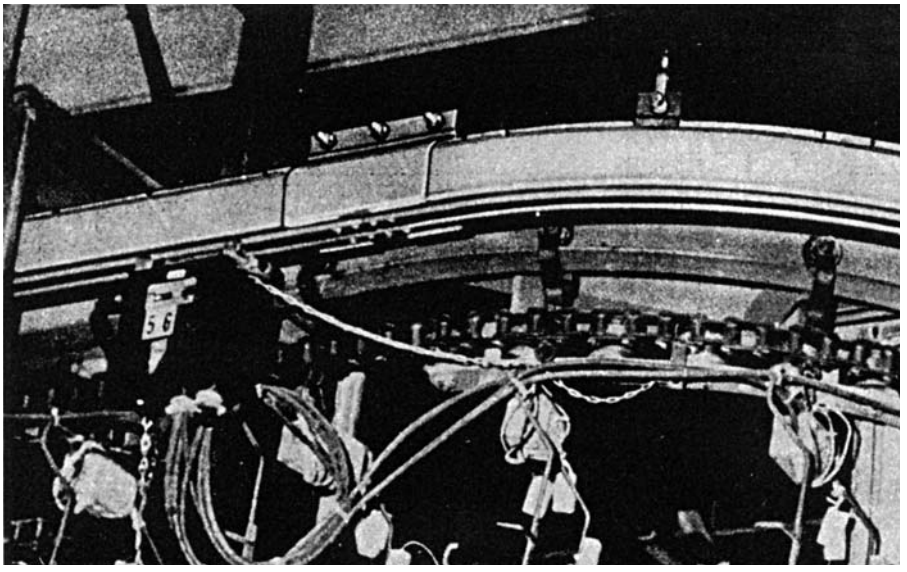
Installing '100' Track

Feedrail "100" track, trolleys and accessories are designed for ready installation without field alteration. Any qualified electrician can do the job. No special tools are required.

Installation should begin at a transfer or switch point or at an expansion track section if these are included in a track run. Otherwise, start at the feed box (center feed or end feed) and proceed away from that point.

The following four steps should be performed in the order given.

1. Install hanger rods or other supports to which Feedrail "100" is to be attached.
2. Assemble Feedrail components. The illustrations on the following pages show the step by step procedure. In many cases the assembling of Feedrail "100" can be facilitated by coupling two or more sections prior to raising into position.
3. Attach Feedrail to supports, making sure adjoining track sections are on the same level and in correct alignment before the track connecting bars and bus bars are secured.
4. Connect electrical supply cables to terminals of feed box.



NOTE: Where Feedrail equipment has been ordered to the job site in advance of actual installation, the equipment should be carefully stored indoors in a clean, dry area.

Feedrail "100" is designed primarily for indoor service in essentially dry locations.

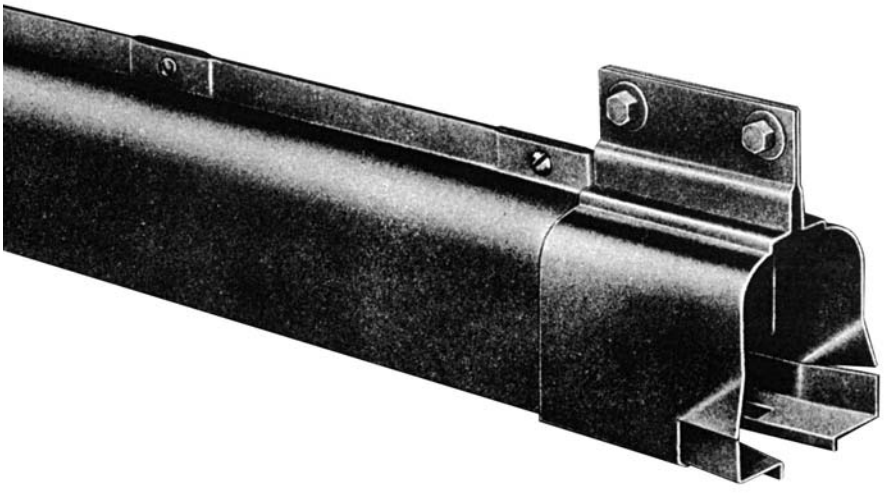
Installing Transfer Track

Transfer Track sections are similar to Plain Track sections except that one or both ends are flared and have a tapered insulator serving as a guide for entrance of the trolleys.

On installations having transfer points, (turntables, slide or tongue switches, hangar door tail-gates, etc.) the Transfer Track sections should be installed first so that proper gaps can be set. These gaps between Transfer Track sections should not exceed ¼ inch.

(Transfer Track sections for use on turntables and slide switches, are not stock items but are manufactured specifically to conform to given dimensions.)

Where motor propelled hoists are used on runs which include transfer points, it is necessary to use two electrically interconnected trolleys. The two trolleys must be spaced sufficiently so that current is maintained to one trolley while the other crosses the transfer point. Duplex Transfer Type Trolleys, listed on page 61 have been designed particularly for this application.



Transfer Track sections at transfer points must be aligned accurately, both horizontally and vertically. They must be supported at the transfer ends by an FR-124 Transfer Point Hanger Set. (Hook bottoms of Transfer Point Hanger Set into slots in the under edges of the track housing. Bring the plates together and fasten to support with bolts as shown).

In every case the mounting of Transfer Track sections should be designed to insure a rigid installation. They should be sway braced to maintain alignment.

Sections are installed and coupled to adjoining track sections as shown on page 68.

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Feedrail®

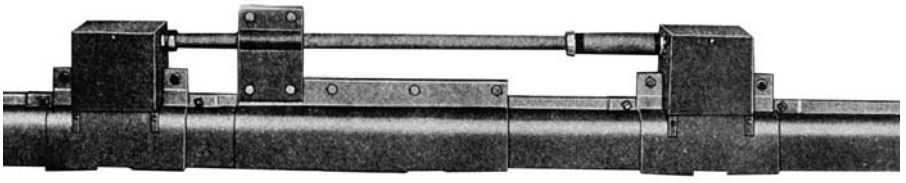
FR100 Series (Feedrail® '100') – Installation Procedure

Building Expansion Track

At least one Expansion Track section should be installed in each 400 ft. of track run to compensate for the cumulative differences in expansion and contraction between the steel casings and copper bus bars. Additional Expansion Track sections may be required if the installation is subjected to a wide range of temperature changes.

Expansion Track sections must be used wherever an installation is made across a building or structural expansion joint.

The standard 10' Expansion Track section is designed to provide 2" of expansion and 2" of contraction above and below the normal 10' length, at 75°F. At the time of installation, the length of the Expansion Track section must be set in accordance with the table below.



When used at points other than a building or structural expansion joint to compensate for unequal expansion or contraction between the steel track housing and copper bus bars, support the Expansion Track section by the coupling plates at each end and by the center support plates from suitable support brackets.

When used across a building expansion joint, center the Expansion Track section across the building expansion joint and support at each end from coupling plates and from the center support plates. Center support must be on the same side of the building expansion joint as the side of the expansion section stenciled "STATIONARY."

Length Settings for Standard 10' Expansion Track

Installation Temperature	Distance in Feet* 100	200	400
100°F	9' 11 3/16"	9' 11 5/8"	9' 11 1/4"
75°F	10'	10'	10'
50°F	10' 3/16"	10' 3/8"	10' 3/4"
25°F	10' 3/8"	10' 3/4"	10' 1 1/2"

For other temperatures and distances, consult technical service group.

*Distance represents:

(1) Footage between expansion track sections on installation having more than one expansion track section.

(2) Overall length of run on installation having only one expansion track section.

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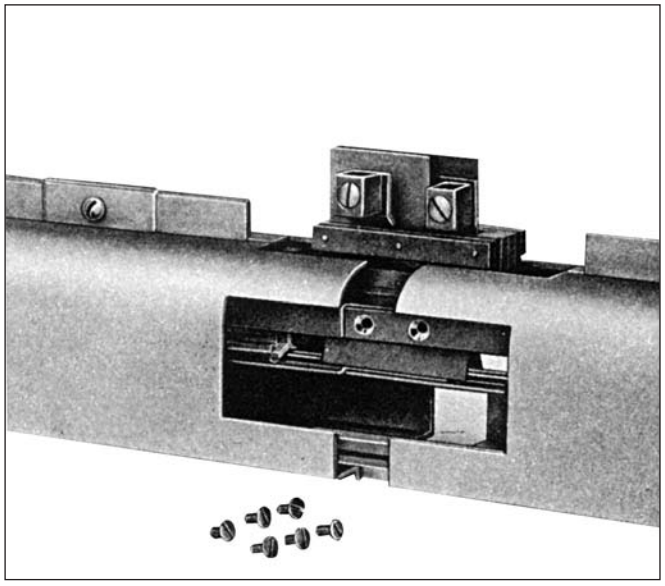
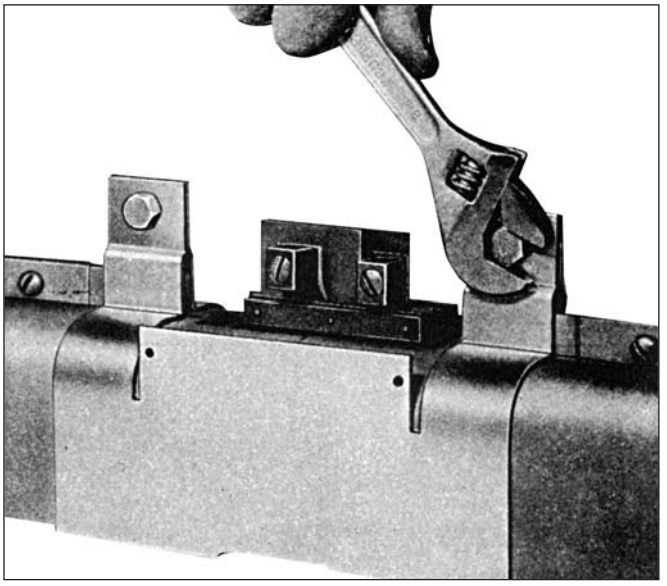
FR100 Series (Feedrail® '100') – Installation Procedure

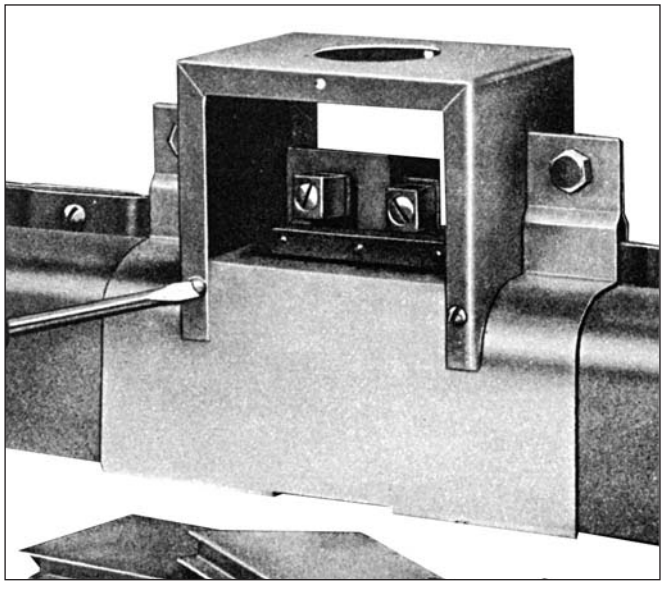
Coupling Sections With Center Feed Box FR-103



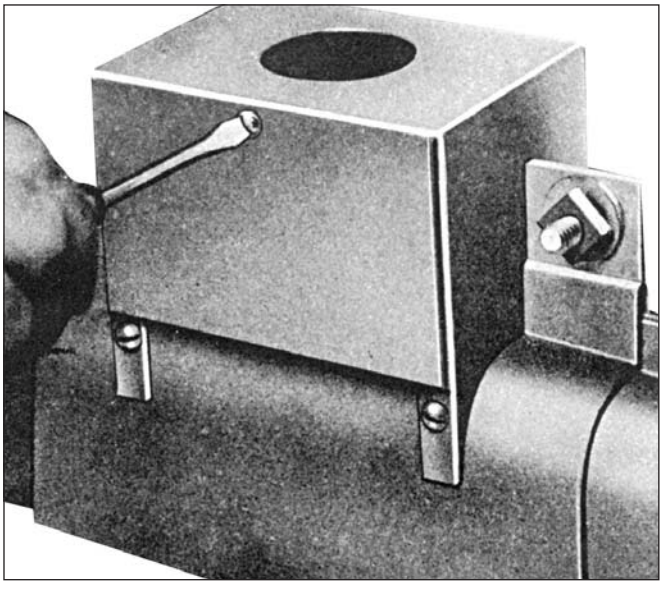
1. Drill out threaded holes in offset ends of bus bars with No. 18 (.169" Dia.) drill. Couple track sections as shown in 1 and 2 on page 68, lapping ends of adjacent bus bars and fastening them to the terminal blocks, using screws furnished with the terminal block. Tighten screws to 15 inch-pound torque.



2. Hook bottoms of coupling plates into slots in the under edge of the track housings. Bring the plates together and fasten with bolts as shown above.



3. Remove knockout in top of feed box frame to provide proper size hole for conduit. Attach feed box frame to coupling plates with the four mounting screws provided.



4. Mount side covers. When ready to connect to power, remove covers, bring in conduit through hole in box frame, make connection to the solderless lugs and replace side covers.

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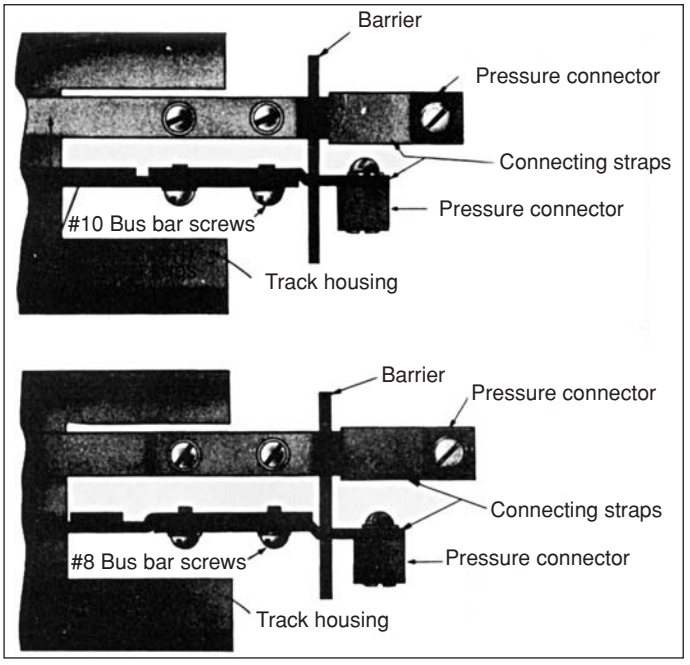
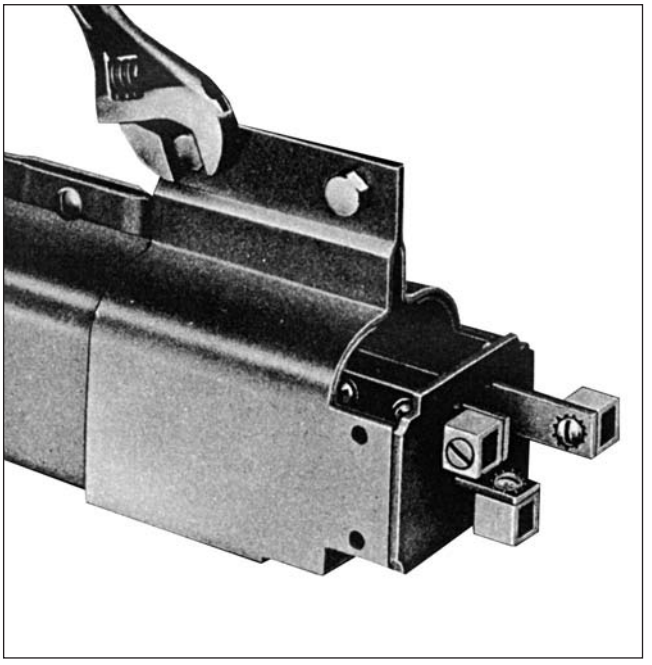
FR100 Series (Feedrail® '100') – Installation Procedure

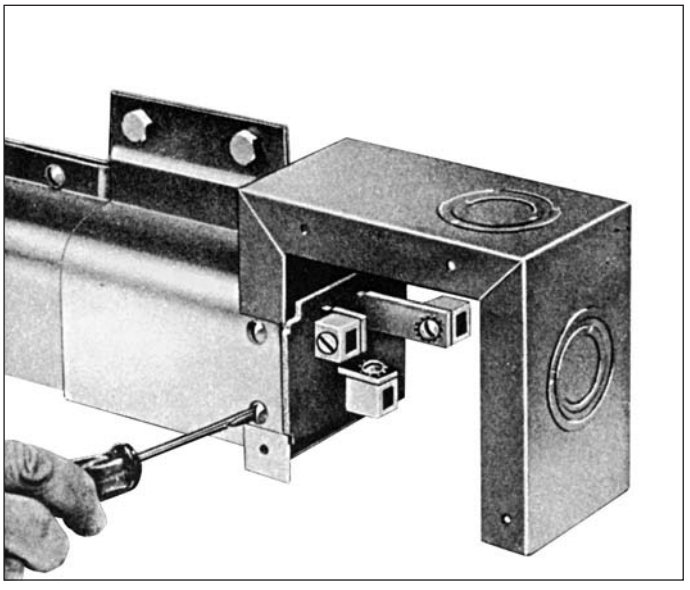
Mounting End Feed Box FR-109



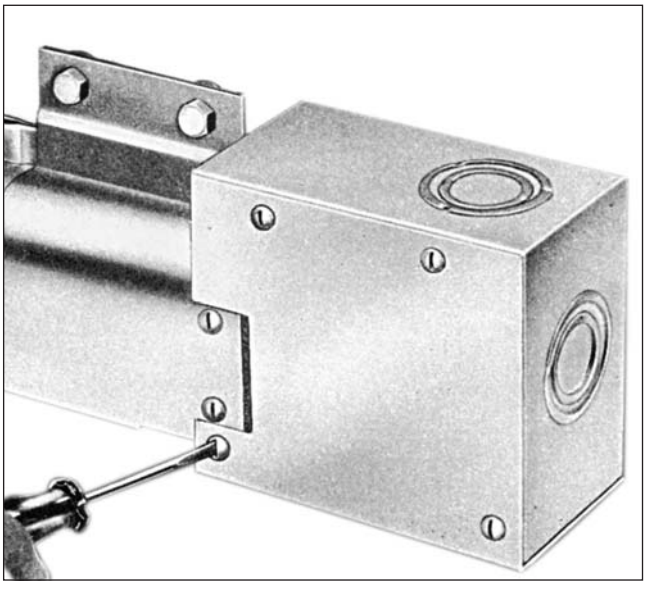
1. Bus bars have one end straight and the other offset. Put connector bars through the insulating barrier and then attach to straight ends as shown in (A) above, or to offset ends as in (B).



2. Hook bottoms of side plates into slots in under edges of track housing. Bring plates together and fasten with clamping bolts as shown.



3. Remove knockout in feed box frame to provide proper size hole for conduit. Attach box frame to side plates so that frame is at top for top or end feeding or at bottom for bottom feeding.



4. Mount box cover. When ready to connect to power, remove cover, bring in conduit through the hole in box frame, make connection to solderless lugs and replace cover.

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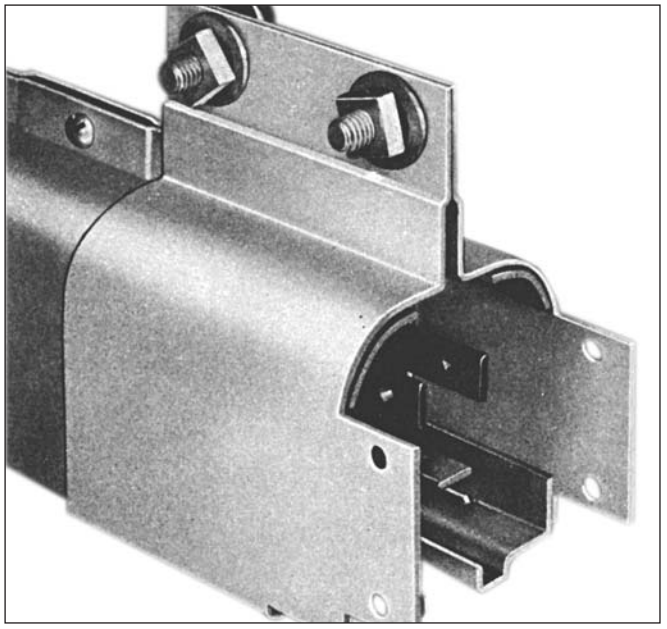
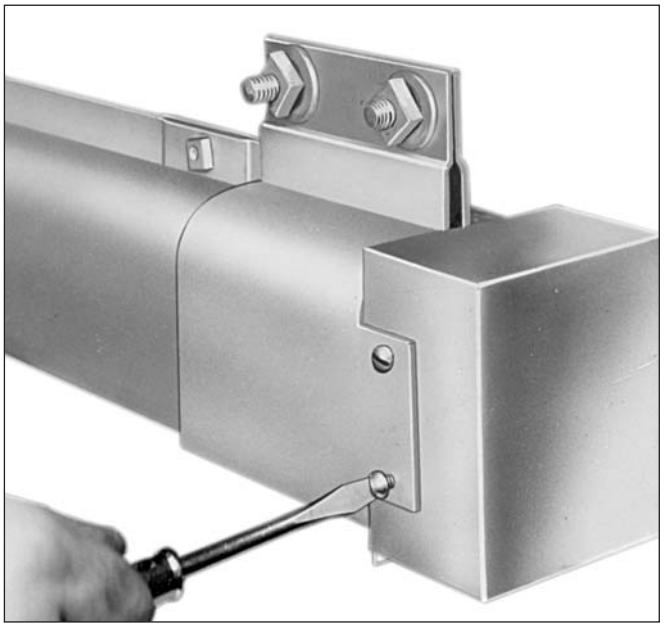
FR100 Series (Feedrail® '100') – Installation Procedure

Mounting Dead End Cap FR-107

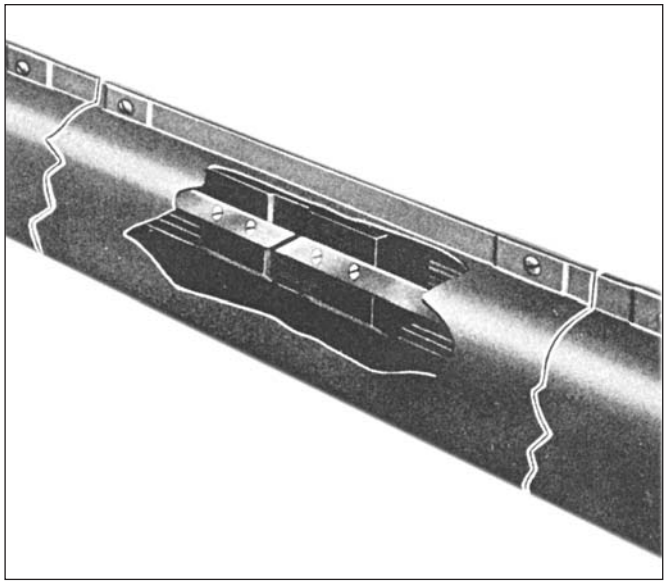


1. Hook bottoms of side plates into the slots in the under edges of the track housing at end of track. Bring plates together and fasten with clamping bolts.



2. Place end cap in position with trolley stop at bottom. Insert and fasten the two mounting screws on each side.

Installing Sectionalizing Track



Sectionalizing Track sections are used to electrically isolate parts of a track run while permitting movement of the trolleys through that portion of the track.

All Sectionalizing Track sections are coupled in the same manner as Plain Track, shown on page 68.

NOTE: The standard sections described on page 52 have internal insulators of a size which do not prevent the interrupting of the current to the trolley. The current is not only maintained through the trolley but the circuits on both sides are electrically tied together through the trolley contacts as the trolley passes the sectionalizing insulator.

Other special sectionalizing track sections which are used in particular applications do break the current to the trolley. In these cases, two electrically connected trolleys must be used. They must be spaced sufficiently apart so that the contacts of one will be on the bus bars while the contacts of the other are passing the insulator. Unless connected in this manner, power will not be maintained to the trolley contacts as they cross the insulators and arcing at the trolley contacts will occur. Sectionalizing track sections must not be used as a circuit interrupting device.

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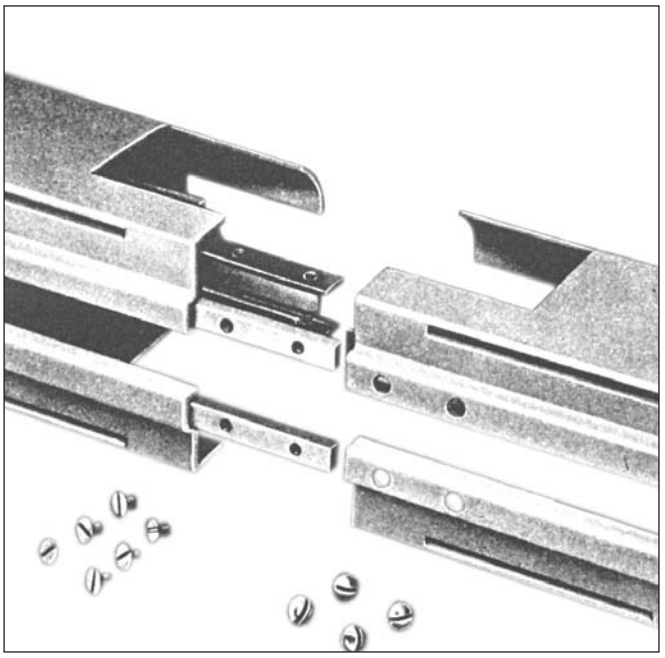
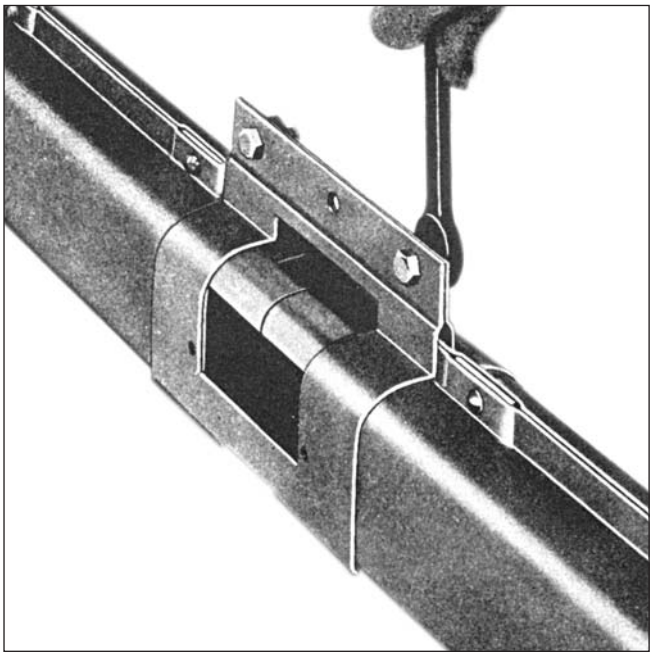
FR100 Series (Feedrail® '100') – Installation Procedure

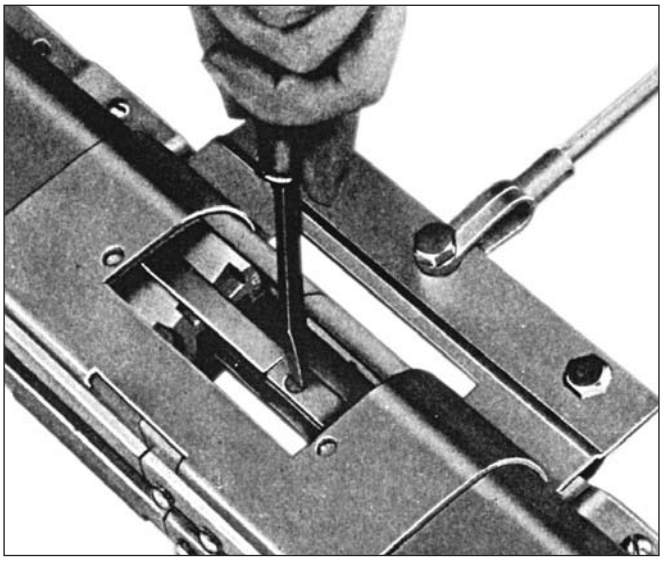
Joining Sections With Coupling Plate Set FR-102



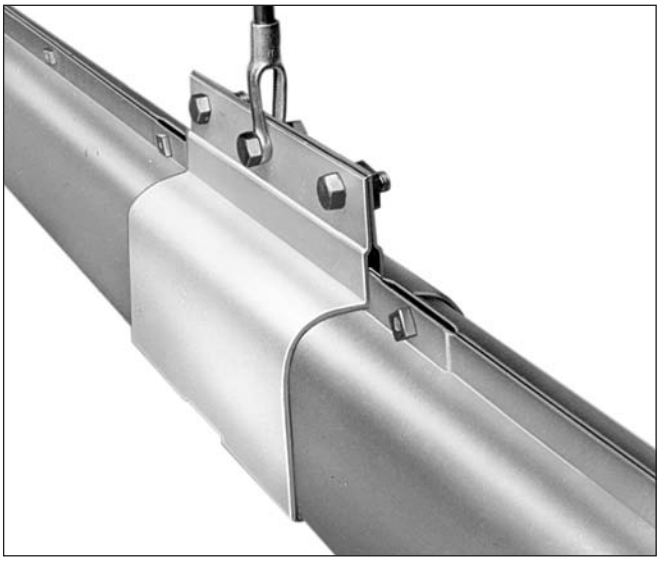
1. Track sections are furnished with two connecting bars on one end of track housing. Place track sections end to end so that ends with and without connecting bars are facing.



2. Bring sections tightly together, lining up the threaded holes in the connecting bars with the holes in the bottom of the track housing. Tighten connecting bar fastening screws to 25 inch-pounds torque. Hook bottom of coupling plates into slots in the under edges of the track housing. Bolt plates together as shown.



3. Attach support to coupling plate. (Tie Rod and clevis method of suspending track is shown.) Connect bus bars, tightening screws to 15 inch-pounds torque.



4. Slide top of coupling set cover plate into top of opening and press against track section. A slight downward pressure will seat the cover plate.

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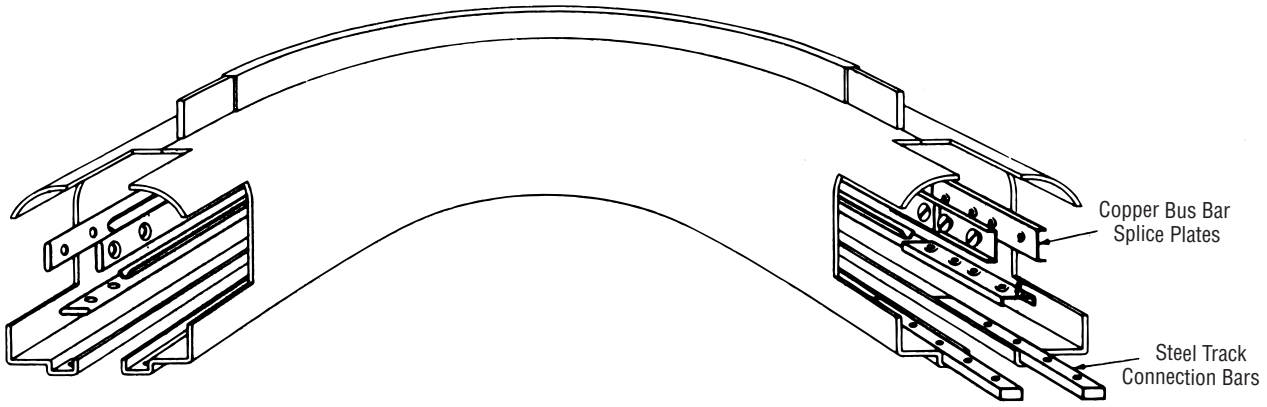
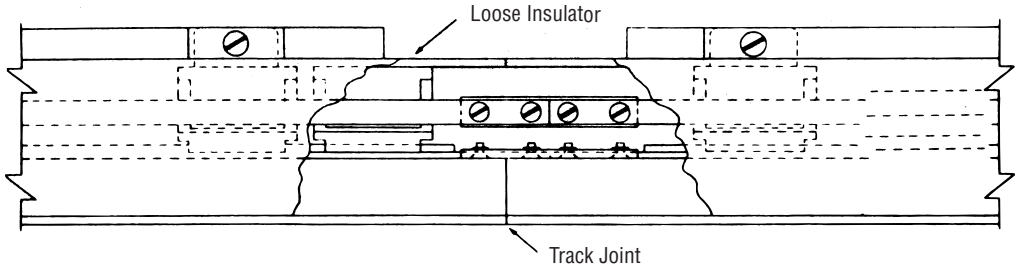
FR100 Series (Feedrail® '100') – Installation Procedure

Joining Curved Track Sections



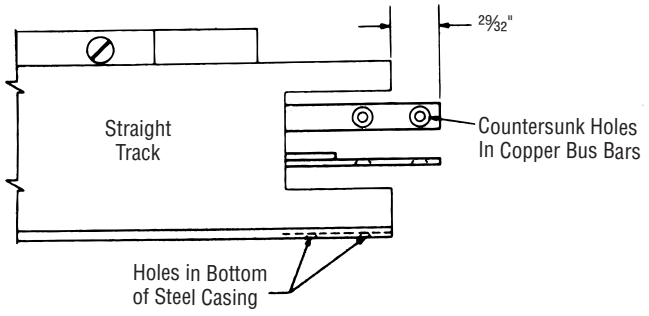
For proper assembly of the curved track, the copper bus bar splice plates and steel track connection bars are required on either the right hand or left hand end of the curved track section.

Curved track sections are furnished with separate copper bus bar splice plates and steel track connection bars. They are supplied in a bag strapped to the track section. The above illustration shows them assembled to the right hand end of the curved track section.

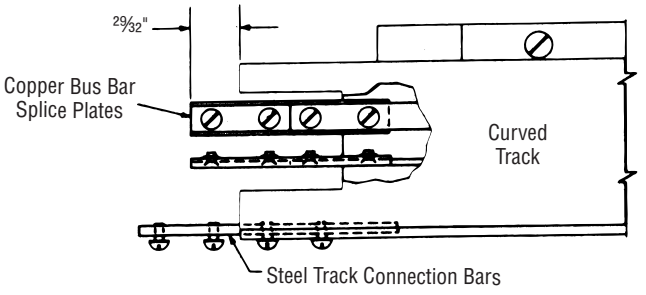


Before putting the copper bus bar splice plates on to the curved track section, place the loose insulator (which comes in a cloth bag fastened to the curved track section) between the curved track end and the first insulator. (See illustration above).

The below illustrations show to which end the copper bus bar splice plates and steel track connection bars must be assembled.



If the straight track to be joined to the curved track has this type of end.



The copper bus bar splice plates and steel track connection bars must be attached to the curved track to form this type of end.

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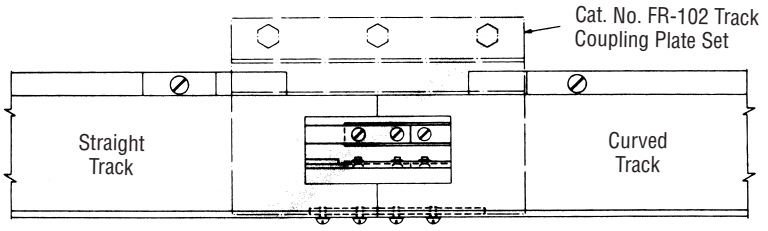
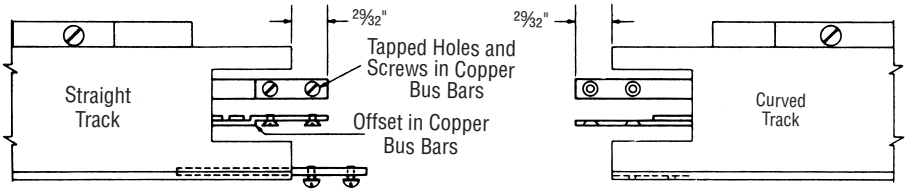
FR100 Series (Feedrail® '100') – Installation Procedure

Joining Curved Track Sections



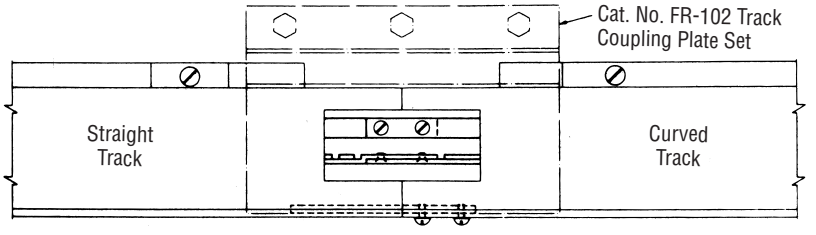
After copper bus bars and steel track casings have been connected, assemble coupling plate set to track by hooking bottoms of coupling plates into slots under edges of track casings, bring plates together, insert and tighten bolts. When complete the joint will look like the above.



If the straight track to be joined to the curved track has the above type of end,

the curved track must have this type of end.

The connection of the straight track to the curved track, as shown above, is made without the use of the copper bus bar splice plates or the steel track connection bars. (These are used at the other end of the curved track section.)



After copper bus bars and steel track casings have been connected, assemble coupling plate set to track by hooking bottoms of coupling plates into slots under edges of track casings, bring plates together, insert and tighten bolts. When complete the joint will look like above.

When joining two curved track sections, follow the procedure on page 69.

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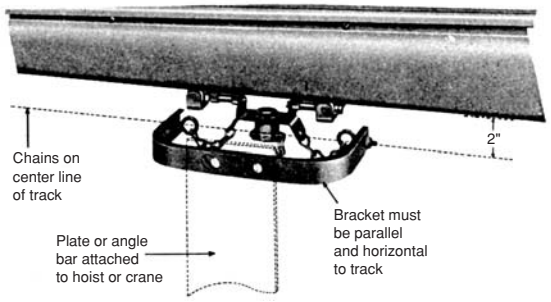
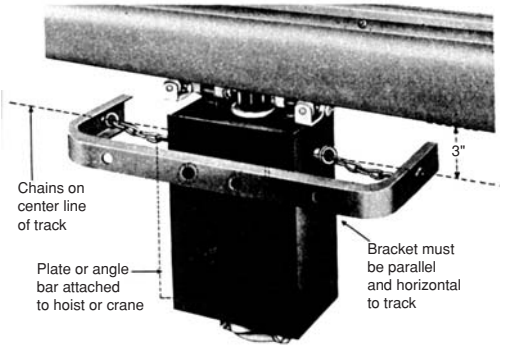
FR100 Series (Feedrail® '100') – Installation Procedure

Mounting of Crane and Hoist Type Trolleys



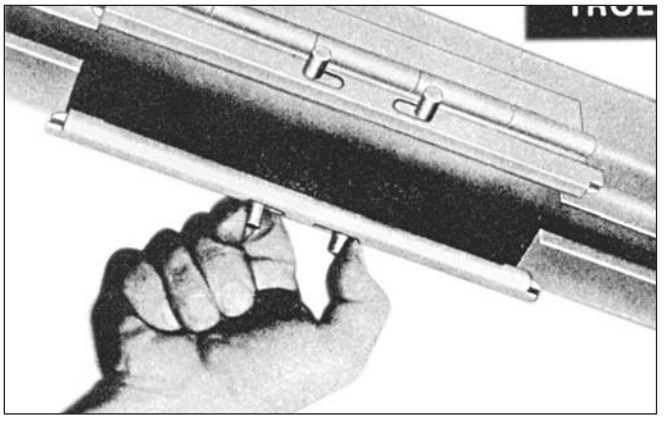
Trolleys for use on Cranes and Hoists (pg 60) are equipped with a pulling bracket with chain linkage. Brackets must be attached to the hoist or crane bridge in such a manner that the chains are on the center line of the track and the bracket is parallel to the track and 2" below the track. Flexible rubber covered cables must be used for electrical connection to each trolley.

Mounting of Special Service Trolleys

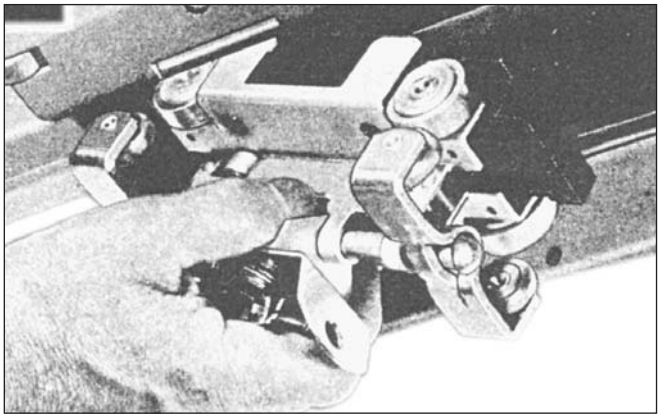


Special Service Trolleys (pg 62) for use on straight track runs are equipped with a pulling bracket with chain linkage. Brackets must be attached to the hoist or crane bridge in such a manner that the chains are on the center line of the track and the bracket is parallel to the track and 3" below the track. Flexible rubber covered cables must be used for electrical connection to each trolley.

Inserting Trolleys

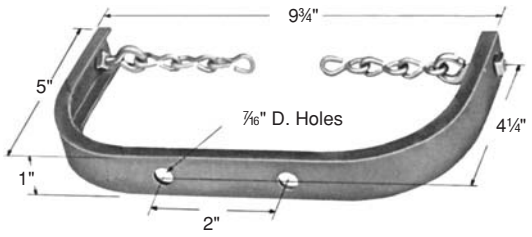


1. Press pins together on underside of door section and swing door open.

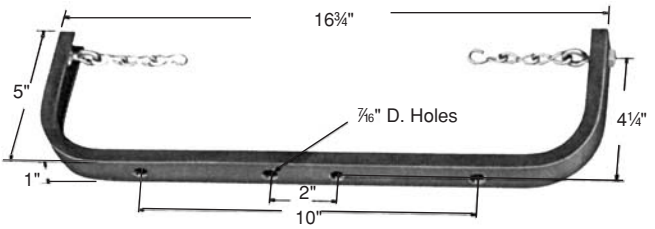


2. Insert trolley as shown. If trolley hits polarizing stop, remove, reverse 180° and reinsert. Close track doors.

Mounting Dimensions of Trolley Pulling Rackets



For use on Standard and Short Radius Crane and Hoist Type Trolleys without Receptacles and on Plain Transfer Type Trolleys without Receptacles.



For use on Special Service Trolleys, on Standard and Short Radius Crane and Hoist Type Trolleys with Receptacles, on Duplex Crane and Hoist Type Trolleys, on Plain Transfer Type Trolleys with Receptacles and on Duplex Transfer Type Trolleys.

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Feedrail®

FR100 Series (Feedrail® '100') – Installation Planning

Before a Feedrail system can be planned or an estimate of the cost prepared, the electrical and mechanical requirements that the system must meet should be known. The following outlines list the basic data needed for all applications and the additional data required for various specific applications.

Basic for All

1. Describe in detail the purpose of the Feedrail "100" system. Will it be used with existing equipment?
2. What is the voltage of the available power source and type of current (A.C. or D.C.)? If A.C., is it single or three phase?
3. Details about any special requirements or conditions which the installation must meet such as moisture, corrosive fumes, high or low temperatures, etc.

For Electric Cranes

4. Sketch giving number, location, length of crane runways and length of bridge. Show location of building expansion joints, if any.
5. How many conductors will be required on each bridge run? — How many for power? — for control? How much current must each conductor carry?
6. What is the maximum travel speed of the bridge? — of the hoist?
7. List of the crane's motors — main hoist, auxiliary hoist, bridge travel, trolley travel — giving the type (D.C., wound rotor, squirrel cage, etc.) of each motor and its horsepower and full-load ampere rating.

For Moving Test Lines

4. Plan view sketch with dimensions showing the length of straight sections and radii of any curves. Indicate the number of outlets required. If there are any sections along the run where test current will not be required, indicate their location and extent.
5. What type of equipment will be tested?
6. Give weight of units to be supported by the system.
7. What amperage range and what fusing arrangements will be required?

For Hangar Doors

4. Sketch with dimensions to show the location and space available for the Feedrail system. Indicate range of roof deflection due to snow loads, temperature changes, etc.
5. Plan view showing exact sizes and locations of tailgates. Give location of expansion joints, if any, in the upper door guides and in the hangar roof structure. Indicate size and number of doors and pattern of door movements.
6. List the number of conductors required and give voltage and amperage requirement of each. Give horsepower and full load current rating of the motors.

For Electric Hoists

4. Plan view sketch of the rail system on which the hoists will travel, giving length of run and dimensions of any switches. What is the minimum distance from Feedrail to monorail in order to clear hoist? Show location of building expansion joints.
5. How many hoists will be used and what is the horsepower and full load current rating of each? Include horsepower and full load current rating of travel motors of any of the hoists that are motor propelled. What are the maximum travel speeds?

For Portable Tool and Conveyor Assembly Lines

4. Sketch with dimensions showing the location and space available for the system. Show location of building expansion joint, if any.
5. What type of portable tools will be used, how many, and what is the horsepower and full-load current rating of each?
6. Is each tool to be fused individually? Give weight of any tools to be supported by the system.
7. List any other equipment that will be operated from the Feedrail system with the horsepower and full-load current rating of each unit.
8. If power for driving any conveyors is also to be taken from the Feedrail system, what is the horsepower and full-load current rating of each motor?

For Special Requirements

4. Plan view sketch with all dimensions which are necessary to make clear the location and extent of the Feedrail "100" system and the radii of any curves it may contain. Show the location of the power source.
5. Full details about equipment which will be operated from the system, including :

(a) Horsepower and full-load current rating of any electrical motors.

(b) Weight of any equipment to be supported by the system.

(c) Fusing arrangements required.

(d) Number of outlets needed.

Engineering Cooperation

The service of our Engineering Department is offered without obligation to those interested in planning a Feedrail installation. Just ask the nearest Feedrail representative to call — or send us complete information as outlined above with a request for recommendations.

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FR100 Series (Feedrail® '100') – Preventive Maintenance

At all times Feedrail equipment should be so protected and maintained as to be kept clean and dry.

Before the Feedrail system is placed in operation, it should be thoroughly checked for horizontal and vertical alignment, adequate track support, and free movement of trolley travel throughout the entire track run. All track, bus bar and feed connections should be mechanically tight. The system should be checked for possible grounds or short circuits. Any paint, grease, or other foreign matter accumulated during construction should be removed from the bus bars, insulation and track interior. Blow out all dust and other loose particles from inside the track.

Expansion sections, when used, must be properly adjusted, located and supported in accordance with installation instructions. Check bus bars and casing for accurate alignment.

Feedrail is both an electrical and a moving mechanical system and therefore should be included as a part of your Preventive Maintenance Program.

Electrical maintenance requires (1) keeping the System dry and clean to prevent electrical leakage or "shorts" across the insulation, and (2) maintaining electrical continuity by keeping bus bar contact surfaces clean and joints tight.

Mechanical maintenance requires (1) preventing excessive wear and (2) replacing parts showing excessive wear.

The following Preventive Maintenance procedure, periodically performed, is recommended.

(a) Remove, thoroughly clean all trolleys and lubricate the wheels. Inspect contacts for excessive wear. Replace worn wheels and contacts.

(b) Clean bus bars with Feedrail Bus Bar Cleaner.

(c) Blow out all foreign particles which have accumulated inside the track.

(d) Check trolleys for free movement within the track.

(e) Check all track supports, track joints, bus bar and feed connections for tightness.

This procedure should be repeated at regular intervals, consistent with the severity of the operations and usage of the system. Plants operating two or three shifts will require more frequent inspection of the Feedrail equipment.

Feedrail is not normally recommended for installations subject to vibration, frequent electrical overload, corrosive fumes and other abnormal conditions. However, should such conditions exist, more frequent inspection and maintenance will be required.

Before additional electrical loads are added to the system it should be determined that sufficient capacity is available.

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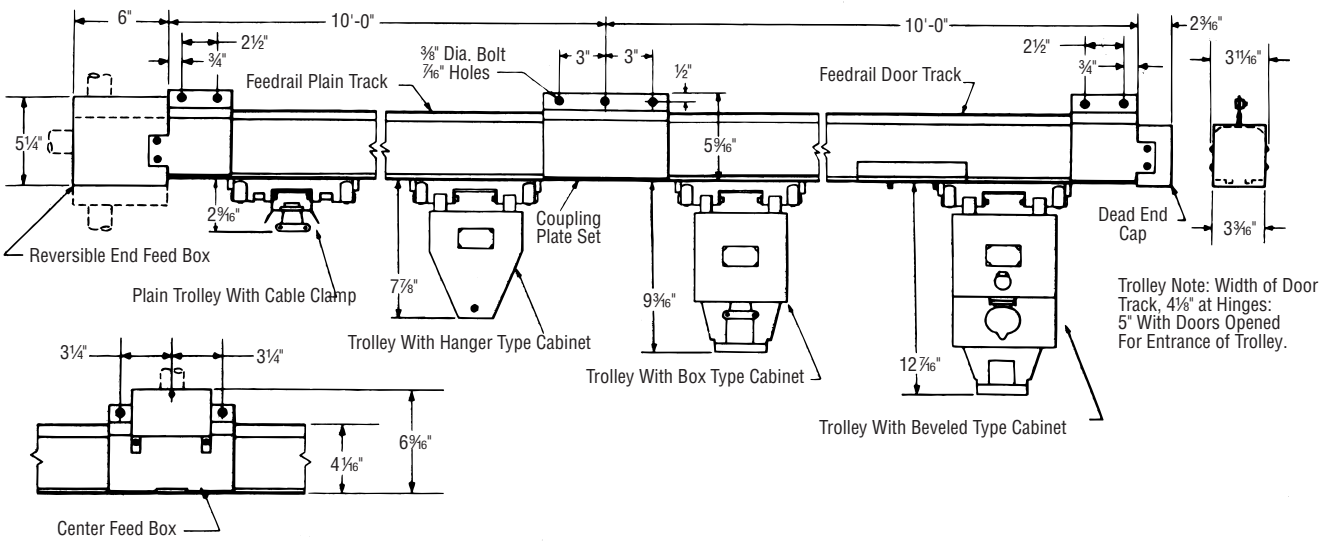
Feedrail®

FR100 Series (Feedrail® '100') – Basic Dimensions/Mounting Methods – Trolley Installation

Basic Dimensions/Mounting Methods of Feedrail '100' Assembly



Examples of the methods commonly used for mounting Feedrail "100" systems track runs are shown. These methods can be used in existing plants as well as in new buildings. Engineers and contractors will readily be able to devise other methods to suit special installations. In every case the mounting should be designed to insure a rigid installation in both horizontal and vertical alignment.

As an aid in planning mountings, the basic dimensions of the "100" systems are shown. These are offered as a guide only. For detailed or certified drawings, consult technical service group.

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FR100 Series (Feedrail® '100') Typical Specification

FR100 SERIES (Feedrail® '100')

The Trolley Busway System (Crane and Hoist Electrification System) shall be of metal enclosed type with internally track-supported trolleys as manufactured by:

Genuine Feedrail®
Thomas & Betts Corp.
Industrial Products

The System shall have a voltage rating of 600 Volts A.C. or 250 Volts D.C. (2 pole) (3 pole) and a continuous current carrying capacity of 100 Amperes per Pole : (When used as a Crane and Hoist Electrification System, the System shall be rated at 100 Amperes continuous service and 150 Amperes intermittent service). The full current carrying capacity of the system shall be maintained throughout.

The System shall permit longitudinal movement of the housing and bus bars, independent of each other, in order to allow for unequal expansion and contraction as a result of temperature changes.

The System shall consist of standardized, interchangeable, Feedrail units — track sections, coupling sets, dead end caps, track hangers and power takeoff trolleys, as called for on the plans.

Track sections shall be pressed 13 gauge zinc-coated sheet steel enclosures having a continuous slot in the bottom. Rolled or drawn copper bus bars, capable of carrying 100 Amperes per pole continuously without overheating, shall be mounted within the steel enclosure on arc-resistant insulators.

Door track sections shall include two hinged doors in the bottom for insertion and removal of trolleys. Door openings shall have a mechanical polarization to insure proper polarity of the trolleys.

Track supported trolleys shall be Cat. No._____ as listed in the Feedrail Catalog. They shall have a zinc-plated sheet steel chassis with metal wheels for support. Horizontal guide wheels shall run in the slot of the Feedrail track to prevent slewing and maintain alignment. Spring-loaded roller, (or brush) contacts shall be mounted on arc-resistant insulation. When inserted in Feedrail track, the contacts shall align with the bus bars at all times.

Trolleys shall be mechanically polarized with respect to door track sections.

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Feedrail®

FH Series (Feedrail® HD) – Design and Construction

Heavy Duty Crane & Hoist Electrification Systems For Movable Trolley Service

Current Carrying Capacity

Track rating: 175 amperes (continuous); 250 amperes (intermittent) or 225 amperes (continuous); 300 amperes (intermittent). Trolleys rated 175 or 225 amperes (continuous).

Voltage

600 volts A.C. — 250 volts D.C.

Track Supports

Supports are of heavy gauge steel. Two supports are required for each track section to provide support every five feet.

Track

Track sections consist of a brake pressed one-piece 13-gauge zinc coated steel housing and the enclosed current carrying bus bars and insulators, all factory assembled in convenient lengths ready for easy fool-proof installation on the job. The lower horizontal portions of the housing serve as smooth, rigid runways for the trolleys.

Heavy Duty track sections are available in various types — Plain, Door, Sectionalizing, and Expansion track sections.

Bus bars are of hard drawn copper. They are amply proportioned to carry the specified current of 175 or 225 amperes per pole continuously, 250 or 300 amperes per pole intermittently, without over-heating.

Bus bar connectors assure full current carrying capacity across the joints without interfering with the free travel of the trolley contacts.

Insulators are made of a high insulating and arc-resistant material.

Trolleys

Basically, all Feedrail Heavy Duty trolleys have a chassis-insulator-contact assembly. The chassis is of heavy gauge steel. The trolley wheels and guide wheels are of the ball-bearing type. A substantially proportioned insulator block combines the best insulating properties with high arc resistance.

Feedrail Heavy Duty trolleys are furnished with silver alloy BRUSH CONTACTS for movement up to 500 feet per minute. For rate of travel or conditions other than above please consult technical service group.

A polarizing tab on the chassis, operating in conjunction with a stop in the door track section, permits insertion of the trolleys only one way. Equipment grounding may be made through the trolleys. **Weights in excess of 40 pounds per trolley are not recommended.**

Grounding

For the safety of personnel, the track casings of the Feedrail system may be used as an equipment grounding conductor for grounding equipment through the individual trolleys.

Equipment grounding may be made by using the grounding lug within the box. Track housing must be grounded through conduit or other suitable means.

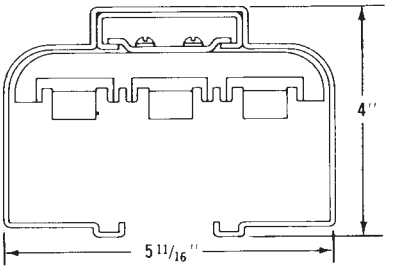
Feedrail Heavy Duty Systems are designed primarily for indoor service in essentially dry locations. Feedrail systems are electrified tracks in which the current carrying components are enclosed in protective steel housings. Smooth riding internally track-supported trolleys take off current and provide electric power for crane and hoist or other types of electrification systems.

The Feedrail Heavy Duty Systems have been specifically developed to provide safe electrification for crane bridges, monorail-hoist installations, test lines, machine tools and similar applications.

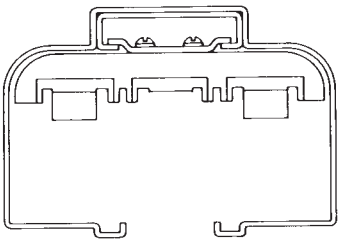
The Feedrail Heavy Duty Systems, are made up of standardized units, factory assembled for fast, complete installation without on-site fabrications.

Feedrail is listed by Underwriter's Laboratories, Inc. (UL) under a CRANE AND HOIST ELECTRIFICATION SYSTEM (File E 31188).

For specific item listing currently in effect consult technical service group.



3 Pole



2 Pole
Center bus bar is omitted for 2 pole system.

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Feedrail®

FH Series (Feedrail® HD) – Track Sections

Plain Track

Continuous Rating: 175 Amperes or 225 Amperes — 600 volts A.C., 250 volts D.C.

Intermittent Rating: (1 minute off, 1 minute on) 250 Amperes or 300 Amperes – 600 volts A.C., 250 volts D.C.

Sections complete with Bus Bars.

Cat. No.	Amperes	Poles	Length*	Weight
FH16500	175	2	10'	82 lbs.
FH17500	175	3	10'	90 lbs.
FH21500	225	2	10'	86 lbs.
FH22500	225	3	10'	94 lbs.

Sections without Bus Bars.

FH2130			10'	61 lbs.

*10 feet is standard length. Shorter lengths furnished on special order.

Door Track

Door track sections are identical to plain track sections except with the addition of two hinged doors in the bottom for the insertion and removal of trolleys. When closed, the doors are securely locked and accurately aligned with the rest of the track to form an uninterrupted runway for the trolleys.

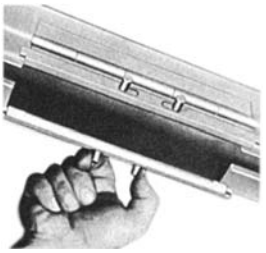
Sections complete with Bus Bars.

Cat. No.	Amperes	Poles	Length*	Weight
FH16501	175	2	10'	83 lbs.
FH17501	175	3	10'	91 lbs.
FH21501	225	2	10'	87 lbs.
FH22501	225	3	10'	95 lbs.

Sections without Bus Bars.

FH2131			10'	62 lbs.

*10 feet is standard length. Shorter lengths furnished on special order.



Hinged doors are easy to open or close. No tools are required. Pressing pins together against spring pressure releases locking bolts.

Door openings are polarized so trolleys cannot be inserted in improper polarity.

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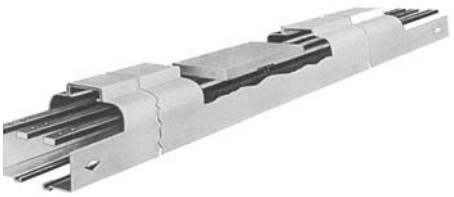
Feedrail®

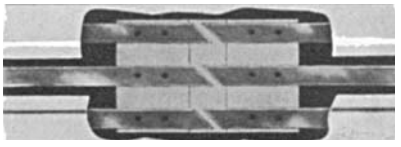
FH Series (Feedrail® HD) – Track Sections



Continuous Rating: 175 Amperes or 225 Amperes — 600 volts A.C., 250 volts D.C.

Intermittent Rating: (1 minute off, 1 minute on) 250 Amperes or 300 Amperes — 600 volts A.C., 250 volts D.C.

Cutout view shows insulator.
Underside view of bus bar air gaps in insulator show below.



Sectionalizing Track

Sectionalizing Track sections isolate portions of a track run. They are the same as Plain Track sections except near the center of the track each bus bar is interrupted by an air gap. The bus bars are so formed and positioned by a special insulator that all trolleys smoothly cross the air gap while maintaining electrical continuity. The circuits on both sides of the gap are momentarily tied together through the trolley contacts as the trolley passes the air gap.

Special Sectionalizing Track sections are made that do interrupt the current to the trolley. When used, these require two electrically connected trolleys to maintain current through the trolley at all times. They must not be used as a circuit interrupting device. Consult technical service group for details.

Sections complete with Bus Bars.

Cat. No.	Amperes	Poles	Length*	Weight
FH16537	175	2	10'	85 lbs.
FH17537	175	3	10'	93 lbs.
FH21537	225	2	10'	89 lbs.
FH22537	225	3	10'	97 lbs.

*10 feet is standard lengths. Shorter lengths furnished on special order.

Continuous Rating: 175 Amperes or 225 Amperes — 600 volts A.C., 250 volts D.C.

Intermittent Rating: (1 minute off, 1 minute on) 250 Amperes or 300 Amperes — 600 volts A.C., 250 volts D.C.

Expansion Track

Expansion Track sections are for use where it is necessary to compensate for the difference in total expansion or contraction between steel track housings and copper bus bars. They must be used on installations across a building or structural expansion joint.

At least one Expansion Track section should be installed in each 400 ft. of track run. Additional Expansion Track sections may be required if the installation is subjected to a wide range of temperature changes.

The standard 10' Building Expansion track section is designed to provide 2" of expansion and 2" of contraction of the steel housing above and below the normal 10' length (at 75°F). If the temperature at the time of installation is other than 75°F, due compensation must be made according to the chart on page 84. The bus bars and track housing in this section telescope to provide a continuous surface for the trolley contacts and the ball bearing support wheels of the trolley. Enclosed flexible jumpers connect the bus bars and maintain full current carrying capacity across the joints.

Sections complete with Bus Bars

Cat. No.	Amperes	Poles	Length*	Weight
FH16555	175	2	10'	118 lbs.
FH17555	175	3	10'	126 lbs.
FH21555	225	2	10'	124 lbs.
FH22555	225	3	10'	138 lbs.

*10 feet is standard length. Shorter lengths furnished on special order.

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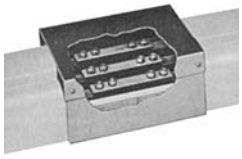
Feedrail®

FH Series (Feedrail® HD) – Track Accessories



FH17502

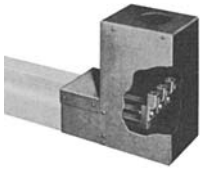
Coupling Plate Set

Cat. No.	Amperes	Poles	Wt.	Description
FH17502	175	2 or 3	2-3/4 lb.	Set includes two heavy gauge steel plates and cover assembled with screws, which couple track sections and cover the joint.
FH22502	225	2 or 3	2-3/4 lb.	

FH16503

Center Feed Box

Cat. No.	Amperes	Poles	Wt.	Description
FH16503	175	2	9.7 lb.	Heavy gauge steel box furnished with positive pressure type solderless connections, for making electrical connections to the power supply between any two adjoining track sections. Lugs will take either aluminum or copper cables. Removable covers on either side of box permit easy access to terminals.
FH17503	175	3	11.3 lb.	
FH21503	225	2	10.0 lb.	
FH22503	225	3	11.6 lb.	



FH16509

End Feed Box Reversible Type

Cat. No.	Amperes	Poles	Wt.	Description
FH16509	175	2	13.3 lb.	Heavy gauge steel box furnished with positive pressure type solderless connections, for making electrical connections to the power supply at the end of a track run. Lugs will take either aluminum copper cables. It also serves as a means of closing the end of the track run. A built-in safety stop prevents trolley from leaving the track run. Design permits box to be reversed so that conduit may be brought in from top or bottom. A removable cover assures easy access to terminals.
FH17509	175	3	15.5 lb.	
FH21509	225	2	13.8 lb.	
FH22509	225	3	16.0 lb.	

FH2107

Dead End Cap

Cat. No.	Amperes	Poles	Wt.	Description
FH2107	175 or 225	2 or 3	4 lb.	Dead End Cap

FH2105

FH-2115

Track Hangers

Cat. No.	Wt.	Description
FH2105	1-1/2 lb.	These hangers are made up of pre-formed heavy gauge steel straps for supporting track sections. Two hanger sets are required for each track section to provide support every five feet.
FH2115	2-3/4 lb.	

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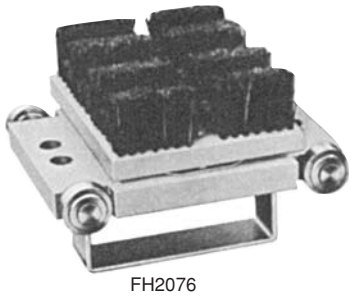
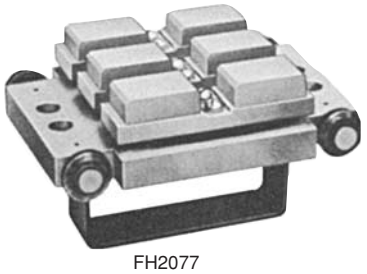
Feedrail®

FH Series (Feedrail® HD) – Track Cleaning Tools/Trolleys



FH2076

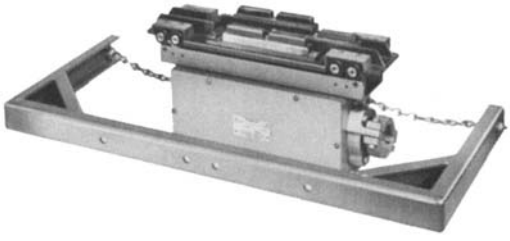


FH2077

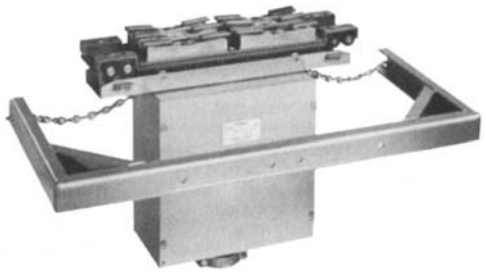
Cleaning Tools

These special trolley mounted Dust Remover and Bus Bar Cleaners are quickly and easily used to keep a Feedrail Heavy Duty System in prime working condition. They are inserted through the door track section, with the power off, and simply pulled back and forth along the length of a track run, cleaning all bus bars at the same time. Their frequency of use will depend upon the severity of foreign matter accumulations, although a regularly scheduled maintenance program is highly recommended. Refer to page 86 for details.

Cat. No.	Description	Poles	Weight
FH2076	Dust Remover w/Bristle Brushes	2 or 3	1.8 lbs.
FH2077	Bus Bar Cleaners with Cleaning Stones	2 or 3	1.8 lbs.



175 Ampere Trolley



225 Ampere Trolley

Trolleys

Design and Construction

The same efficient engineering and clean-cut construction which is a hallmark of the entire Feedrail system is evident in the internally track supported Heavy Duty trolleys.

The chassis of these trolleys is of one piece heavy gauge steel. It is equipped with heavy duty enclosed ball-bearing wheels for support; horizontally mounted ball-bearing guide wheels running in the slot of the track to prevent slewing; and ball-baring wheels on pivoted arms of the undercarriage to prevent upthrust. This wheel combination assures smooth, easy running trolleys.

The insulator-contact assembly consists of a substantially proportioned mechanically strong arc-resisting insulator block on which the contact brushes are mounted and held in true alignment. Springs keep the brushes in continuous firm contact with the bus bars. The insulator-contact assembly is fastened by machine screws and can be removed as a unit.

Specially designed heavy duty silver alloy brush type contacts assure full current carrying capacity. Brushes are individually spring loaded and maintain full contact pressure and alignment with the bus bars at all times.

A heavy gauge sheet steel terminal box with removable side cover is supported by the trolley chassis. This box serves to enclose the solderless type pressure connectors which are used to make cable connections to the trolley.

Lugs take either aluminum or copper cables. Heavy duty cable grips prevent strain on the terminals.

Trolleys are designed for operation at speeds up to 500 feet per minute. A bracket and chain linkage is provided for connecting the trolleys to the powered equipment. Chains are factory adjusted for correct propelling of the trolley in the track run.

Cat. No.	Amperes	Poles	Weight
FH16525	175	2	36 lbs.
FH17525	175	3	37 lbs.
FH21525	225	2	38 lbs.
FH22525	225	3	39 lbs.

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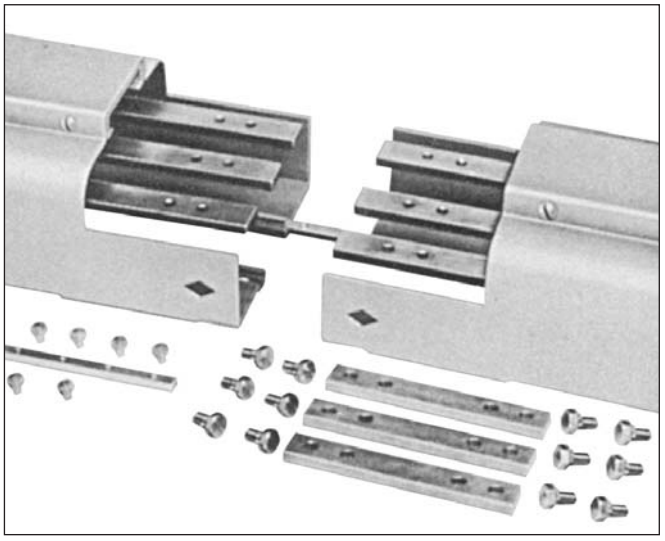
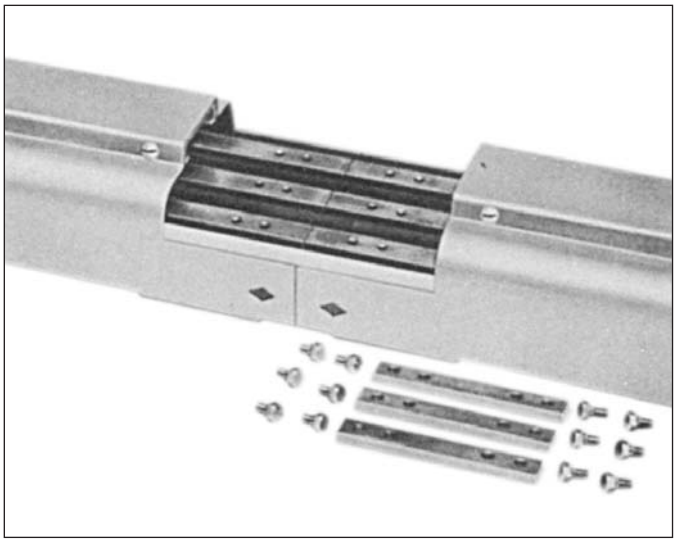
FH Series (Feedrail® HD) – Installation Procedure

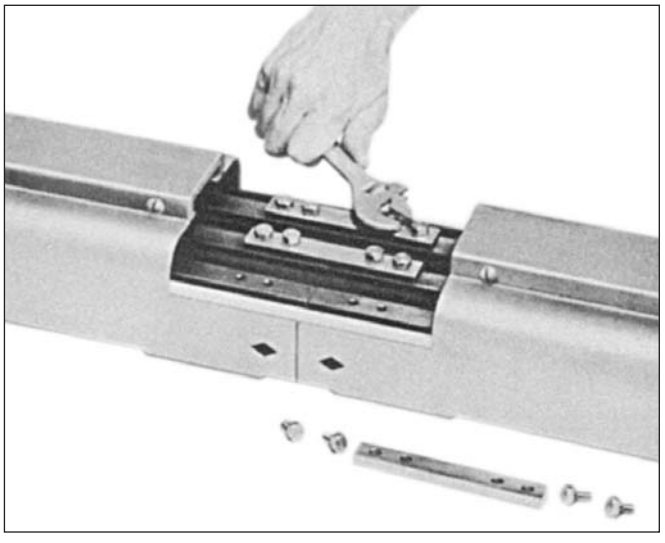
Joining Straight Sections with Coupling Plate



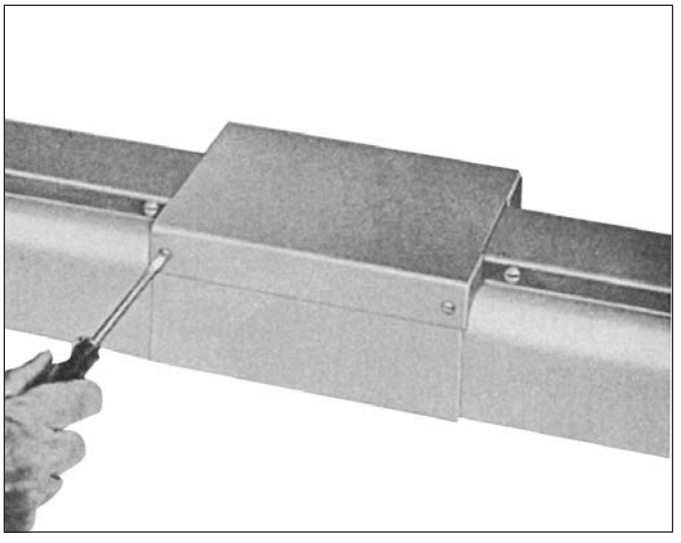
1. Track sections must be placed so that the diamond match marks are on the same side. Fasten the two steel connection bars to the inside of the lower channel-shaped groove of the track housing so that the bars extend halfway out.



2. Bring the ends of the adjoining track sections together in horizontal and vertical alignment. Attach track connection bars.



3. Fasten the copper splice bars across the bus bar joints with the hex head locking screw as shown. (Use only locking screws provided.)



4. Hook bottoms of coupling plates into slots under edge of the track housing. Hold plates in position, put cover in place and fasten.

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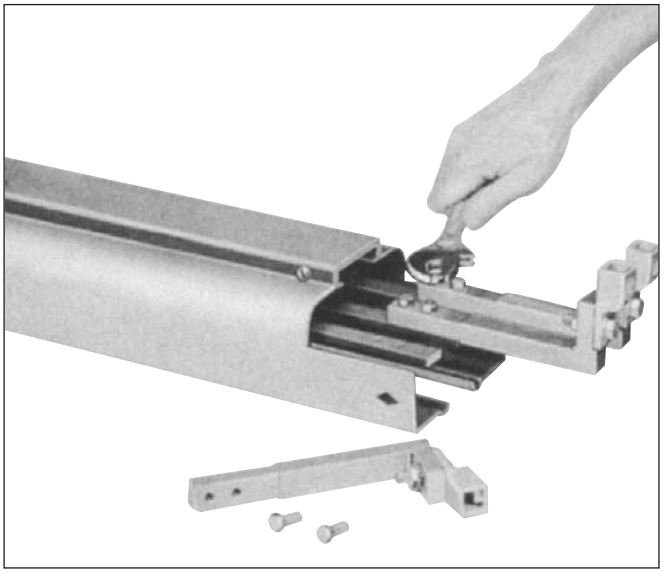
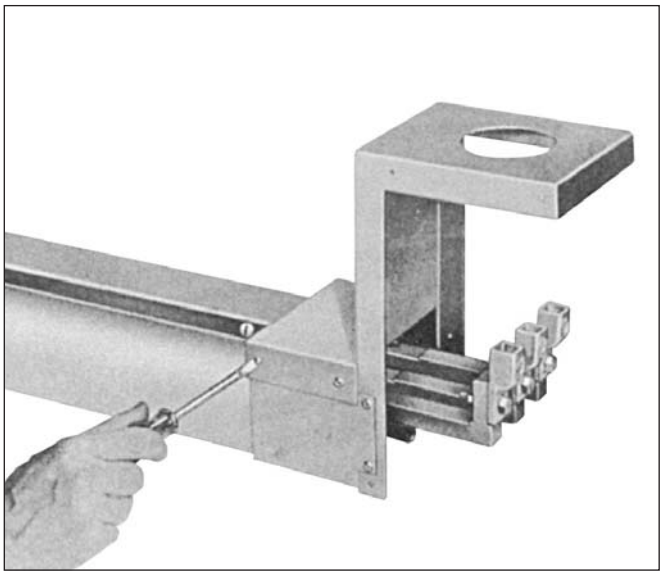
Feedrail®

FH Series (Feedrail® HD) – Installation Procedure

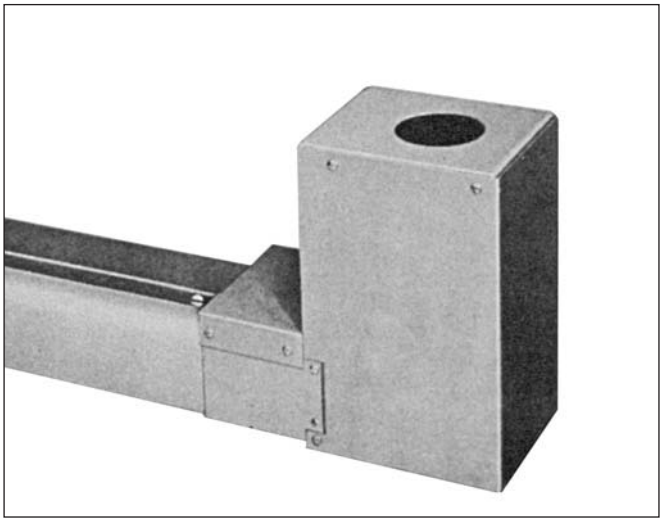
Mounting Reversible End Feed Box



1. Bolt positive pressure type solderless terminals to bus bars. Lugs should be up if power is to be brought in from top; down if brought in from the bottom.

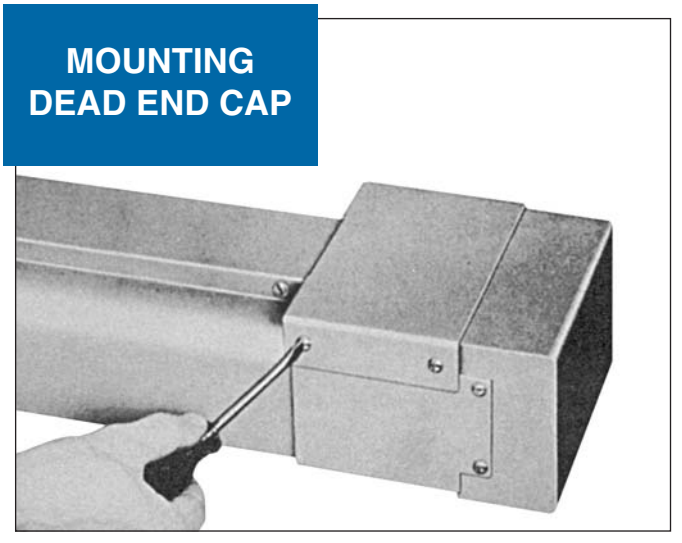


2. Hook side plates into slots under edges of track housing. Attach end feed box frame to side plates so that conduit hole is at top or bottom to match position at which power will be brought in.



3. Connect power source to terminals. (Power supply cables should not put strain on terminals.) Fasten cover to end feed box.

MOUNTING DEAD END CAP



1. Hook dead end cap side plates into slots under edges of track housing. Hold plates in position and fasten end cap in place. Mount top cover.

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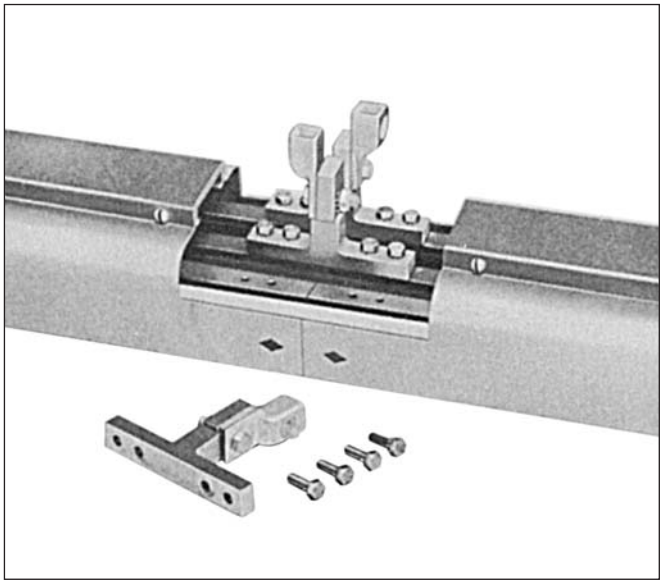
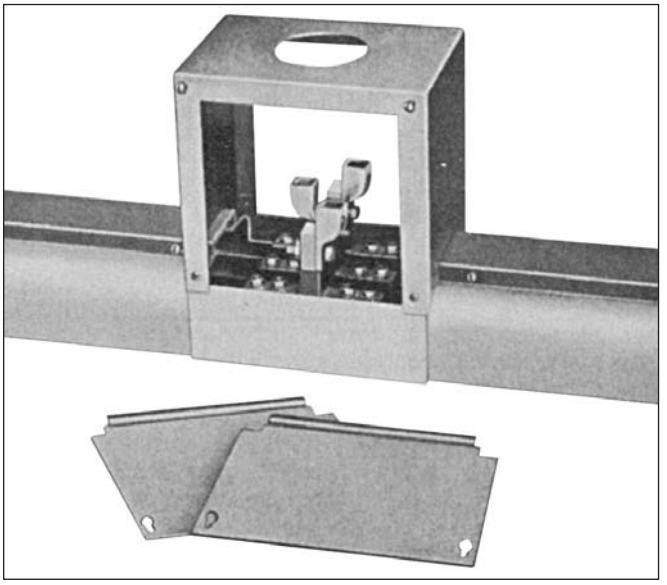
FH Series (Feedrail® HD) – Installation Procedure

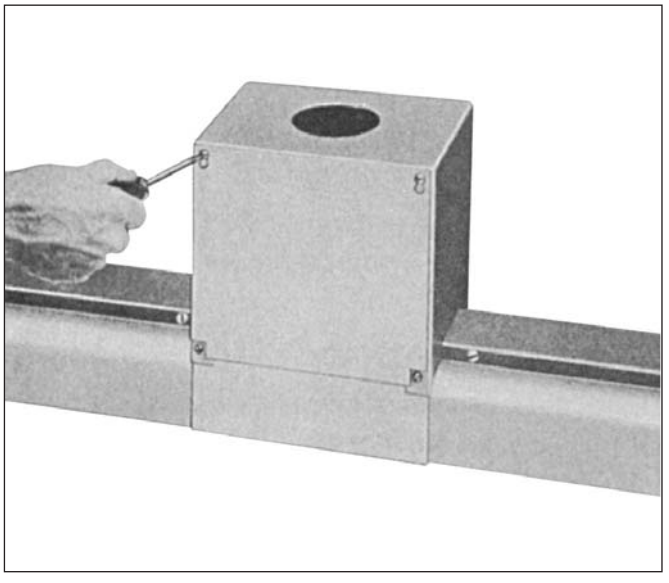
Coupling Sections with Center Feed Box



1. Join track as shown in steps 1 and 2 on page 81. Attach positive type solderless terminals to bus bars.

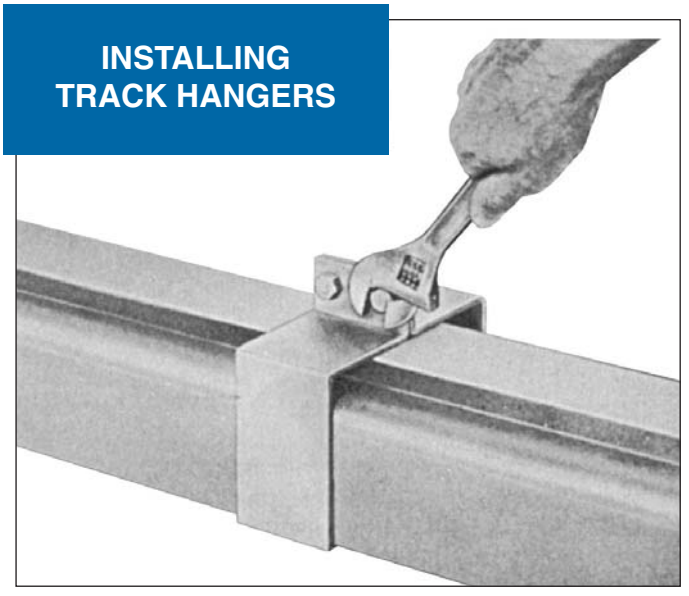


2. Hook bottom of feed box side plates into slots under edges of track housing. Place center feed box frame in place and attach to the side plates.



3. Connect power source to terminals. (Power supply cables should not put strain on terminals.) Mount the two cover plates to the center feed box frame.

INSTALLING TRACK HANGERS



1. Assemble two piece hanger set over the track section and attach to mounting bracket or other support. (Two hanger sets should be used for each 10 foot track section on approximately 5 foot centers.)

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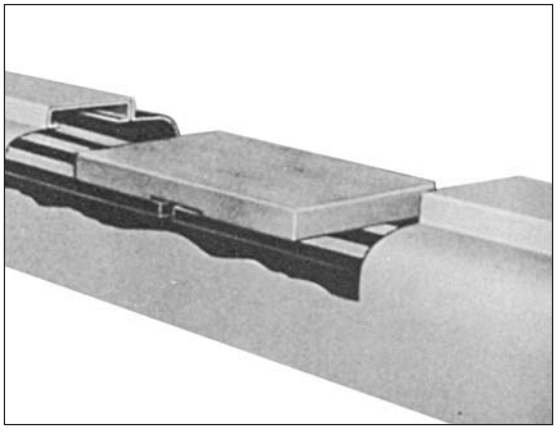
Feedrail®

FH Series (Feedrail® HD) – Installation Procedure

Installing Sectionalized Track



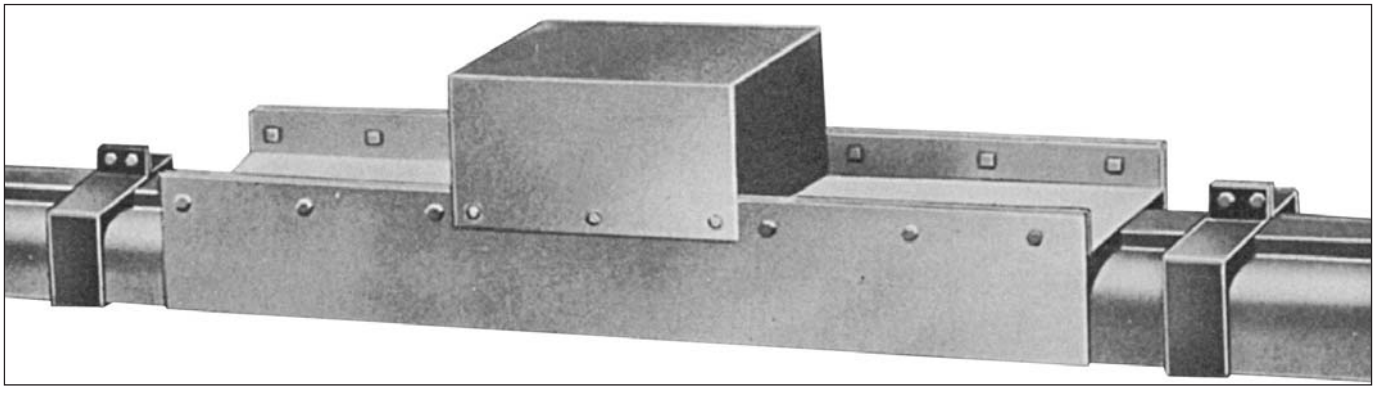
Sectionalizing Track sections are used to electrically isolate parts of a track run while permitting movement of the trolleys through that portion of the track.

All Sectionalizing Track sections are coupled in the same manner as Plain Track, shown on page 81.

Note: The standard sections described on page 78 have internal insulators of a size which do not prevent the interrupting of the current to the trolley. The current is not only maintained through the trolley but the circuits on both sides are electrically tied together through the trolley contacts as the trolley passes the sectionalizing insulator.

Other special sectionalizing track sections which are used in particular applications do break the current to the trolley. In these cases, two electrically connected trolleys must be used. They must be spaced sufficiently apart so that the contacts of one will be on the bus bars while the contacts of the other are passing the insulator. Unless connected in this manner, power will not be maintained to the trolley contacts as they cross the insulators and arcing at the trolley contacts will occur. Sectionalizing track sections must not be used as a circuit interrupting device.

Installing Expansion Track



At least one Expansion Track section should be installed in each 400 ft. of track run to compensate for the cumulative differences in expansion and contraction between the steel casings and copper bus bars. Additional Expansion Track sections may be required if the installation is subjected to a wide range of temperature changes.

Expansion Track sections must be used wherever an installation is made across a building or structural expansion joint.

The standard 10' Expansion Track section is designed to provide 2" of expansion and 2" of contraction above and below the normal 10' length, at 75°F. At the time of installation, the length of the Expansion Track section must be set in accordance with the table below.

When used at points other than a building or structural expansion joint to compensate for unequal expansion or contraction between the steel track housing and copper bus bars, support the Expansion Track section by the coupling plates at each end and by the center support plates from suitable support brackets. When used across a building expansion joint, center the Expansion Track section across the building expansion joint.

Length Settings for Standard 10' Expansion Track

Installation Temperature	Distance in Feet* 100	200	400
100° F	9' 11 3/16"	9' 11 5/8"	9' 11 1/4"
75° F	10'	10'	10'
50° F	10' 3/16"	10' 3/8"	10' 3/4"
25° F	10' 3/8"	10' 3/4"	10' 1 1/2"

For other temperatures and distances, consult factory.

*Distance represents:

(1) Footage between Expansion Track sections on installation having more than one Expansion Track section.

(2) Overall length of run on installation having only one Expansion Track section.

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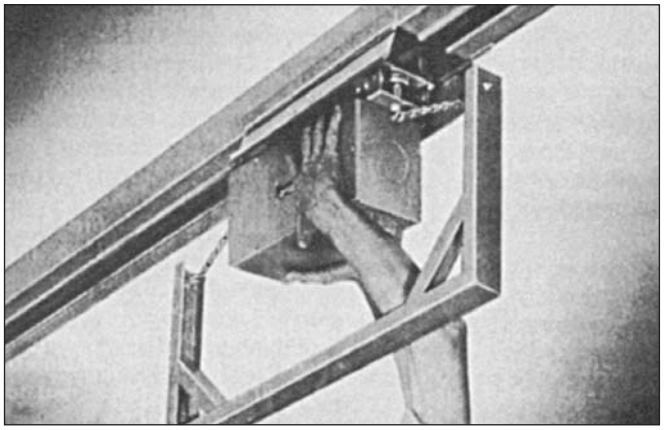
FH Series (Feedrail® HD) – Trolley Installation

Mounting of Heavy Duty Trolleys

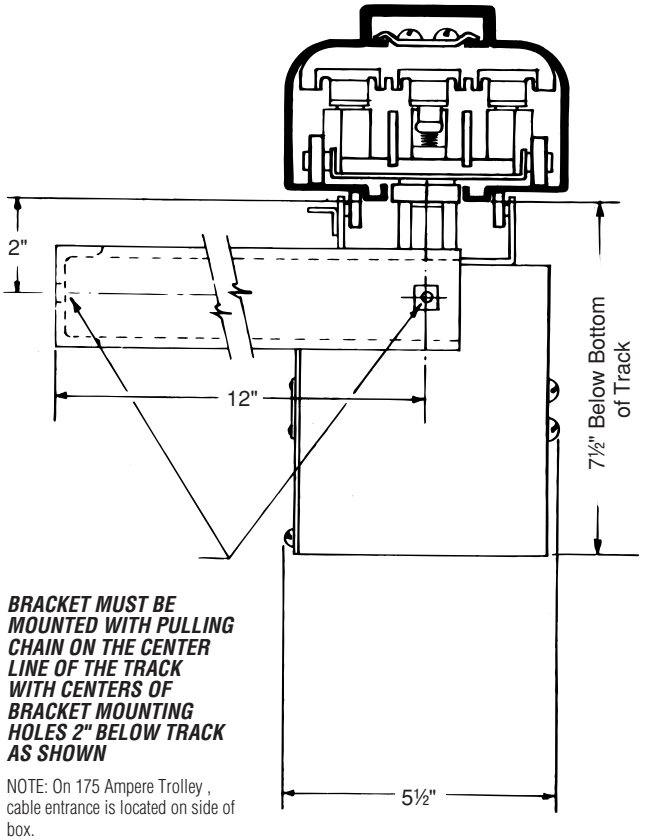


(1) Press latch pins on bottom of door track section together and open doors.

(2) Insert trolley. If trolley hits polarizing stop, remove, reverse 180° and reinsert. Close track doors.

(3) Mount drive bracket in a horizontal plane as shown below. Chains must be parallel with and on the center line of the track.

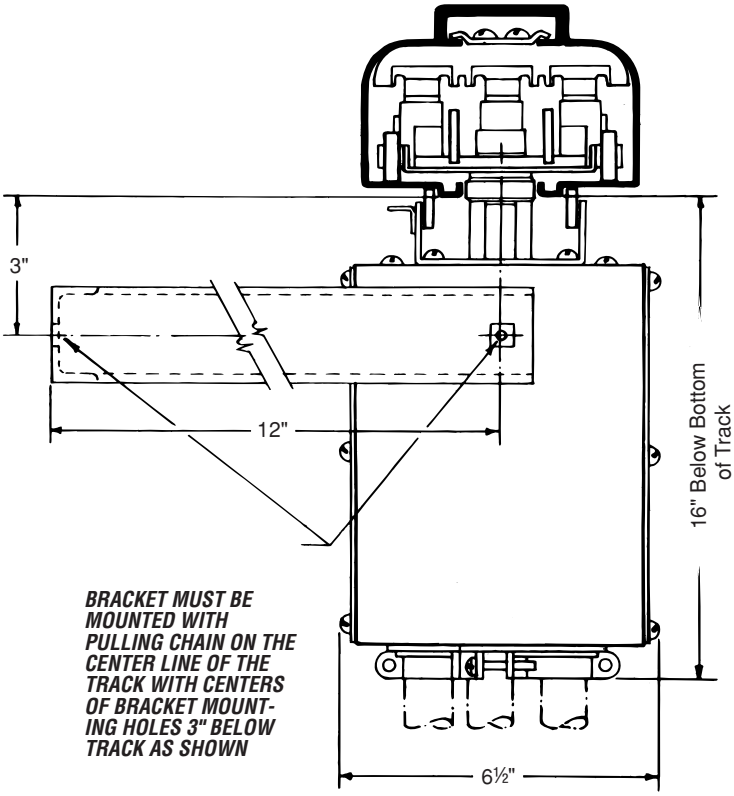
When wiring trolleys, a looped flexible wire cable should be used (not rigid or flexible conduit). The flexible cable should be attached to the trolley so no strain is placed on the trolley by the cable. Trolleys should be allowed to travel freely in the track run.



BRACKET MUST BE MOUNTED WITH PULLING CHAIN ON THE CENTER LINE OF THE TRACK WITH CENTERS OF BRACKET MOUNTING HOLES 2" BELOW TRACK AS SHOWN

NOTE: On 175 Ampere Trolley , cable entrance is located on side of box.

175 Amp. Trolley



BRACKET MUST BE MOUNTED WITH PULLING CHAIN ON THE CENTER LINE OF THE TRACK WITH CENTERS OF BRACKET MOUNTING HOLES 3" BELOW TRACK AS SHOWN

225 Amp. Trolley

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Feedrail®

FH Series (Feedrail® HD) – Installation Planning and Preventive Maintenance

Installation Planning

Before a Feedrail Heavy Duty System can be planned or an estimate of the cost prepared, the electrical and mechanical requirements that the system must meet should be known. The following outlines list the basic data needed for all applications and the additional data required for various specific applications.

Basic for All

1. Describe in detail the purpose of the Feedrail Heavy Duty System. Will it be used with existing equipment?
2. How many conductors will be required?
3. What voltage and current is to be applied to each conductor? Where is the power source located?
4. Details about any special requirements or conditions which the installation must meet such as moisture, corrosive fumes, high or low temperatures, etc.

NOTE: Basic dimensions of the Feedrail Heavy Duty System and various methods of mounting and supporting the system are given on page 82 and 84.

For Electric Cranes

5. Sketch giving number, location, length of crane runways and length of bridge. Show location of building expansion joints, if any.
6. How many conductors will be required on each bridge run? — How many for power? — for control? How much current must each conductor carry?
7. What is the maximum travel speed of the bridge? — of the hoist?
8. List of the crane's motors — main hoist, auxiliary hoist, bridge travel, trolley travel — giving the type (D.C., wound rotor, squirrel cage, etc.) of each motor and its horsepower and full-load ampere rating.

For Electric Hoists

5. Plan view sketch of the rail system on which the hoists will travel, giving the length of run of straight sections, radii of any curves and dimensions of any switches. What is the minimum distance from Feedrail to crane rail in order to clear hoist? Show location of building expansion joints or expansion joints in the structure from which the Feedrail will be supported.
6. How many hoists will be used and what is the horsepower and full load current rating of each? Include horsepower and full load current rating of travel motors of any of the hoists that are motor propelled. What are the maximum travel speeds?

For Production Machines

5. Plan view sketch with dimensions showing the location of the Feedrail System.
6. Indicate the number of conductors required and give voltage and amperage requirement of each. Give horsepower and full load current rating of each motor.
7. List any other equipment that will be powered by the Feedrail and give its full load current rating.

For Special Requirements

5. Plan view sketch with all dimensions which are necessary to make clear the location and extent of the Feedrail Heavy Duty. Show the location of the power source.
6. Full details about equipment which will be operated from the system, including

(a) Horsepower and full-load current rating of any electrical motors.

(b) Weight of any equipment to be supported by the system.

(c) Fusing arrangements required.

(d) Number of outlets needed.

Engineering Cooperation

Working out the details of a Feedrail Heavy Duty installation is not difficult once all the electrical and mechanical requirements have been definitely determined. We should like to suggest, however, that considerable time can be saved by enlisting the cooperation of Feedrail engineers from the start. They have helped work out the details of hundreds of installations and consequently have at their fingertips the answers to the questions and problems usually involved. Their cooperation is offered without obligation. Just ask the nearest representative to call — or send us complete information as outlined above with a request for recommendations.

Preventive Maintenance

At all times Feedrail equipment should be so protected and maintained as to be kept clean and dry.

Before the Feedrail system is placed in operation, it should be thoroughly checked for horizontal and vertical alignment, adequate track support, and free movement of trolley travel throughout the entire track run. All track, bus bar and feed connections should be mechanically tight. The system should be checked for possible grounds or short circuits. Any paint, grease, or other foreign matter accumulated during construction should be removed from the bus bars, insulation and track interior. Blow out all dust and other loose particles from inside the track.

Expansion sections, when used, must be properly adjusted, located and supported in accordance with installation instructions. Check bus bars and casing for accurate alignment.

Feedrail is both an electrical and a moving mechanical system and therefore should be included as a part of your Preventive Maintenance Program.

Electrical Maintenance requires
(1) keeping the System dry and clean to prevent electrical leakage or "shorts" across the insulation, and
(2) maintaining electrical continuity by keeping bus bar contact surfaces clean and joints tight.

Mechanical Maintenance requires
(1) preventing excessive wear and
(2) replacing parts showing excessive wear.

The following Preventive Maintenance procedure, periodically performed is recommended:

(a) Remove, thoroughly clean all trolleys and lubricate the wheels. Inspect contacts for excessive wear. Replace worn wheels and contacts.

(b) Clean bus bars with Feedrail Track Cleaning Tools.

(c) Blow out all foreign particles which have accumulated inside the track.

(d) Check trolleys for free movement within the track.

(2) Check all track supports, track joints, bus bar and feed connections for tightness.

This procedure should be repeated at regular intervals, consistent with the severity of the operations and usage of the system. Plants operating two or three shifts will require more frequent inspection of the Feedrail® equipment.

Feedrail® is not normally recommended for installations subject to vibration, frequent electrical overload, corrosive fumes and other abnormal conditions. However, should such conditions exist, more frequent inspection and maintenance will be required.

Before additional electrical loads are added to the system it should be determined that sufficient capacity is available.

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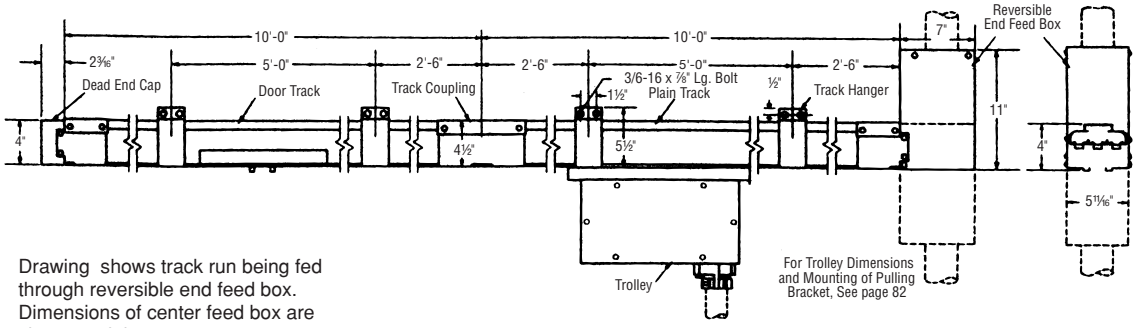
FH Series (Feedrail® HD) – Basic Dimensions/Mounting Methods

Basic Dimensions of Feedrail Heavy Duty Systems

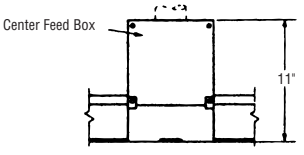
The following are the basic dimensions of the Heavy Duty Feedrail System. These are offered as a guide only. For detailed or certified drawings consult technical service group.

Mounting Methods

Examples of the methods commonly used for mounting Feedrail Heavy Duty Systems track runs are shown below. These methods can be used in existing plants as well as in new buildings. Engineers and contractors will readily be able to devise other methods to suit special installations. In every case the mounting should be designed to insure a rigid installation in both horizontal and vertical alignment. Rod or strap supports should not exceed 2 feet in length without sway bracing.



Drawing shows track run being fed through reversible end feed box. Dimensions of center feed box are shown at right.



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Feedrail®

FH Series (Feedrail® HD) – Typical Specification

FH SERIES (Feedrail® 'HD')

The Trolley Busway System (Crane and Hoist Electrification System) shall be of metal enclosed type with internally track-supported trolleys as manufactured by:

Genuine Feedrail®
Thomas & Betts Corp.
Industrial Products

The System shall have a voltage rating 600 Volts A.C., or 250 Volts D.C. (2 pole) (3 pole), and a continuous current carrying capacity of (175)(225) Amperes per pole. (When used as a Crane and Hoist Electrificaton System, the System shall be rated at (175)(225) Amperes continuous service and (250)(300) Amperes intermittent service). The full current carrying capacity of the system shall be maintained throughout.

The System shall permit longitudinal movement of the housings and bus bars, independent of each other, in order to allow for unequal expansion and contraction as a result of temperature changes.

The System shall consist of standardized, interchangeable, Feedrail units — track sections, coupling sets, dead end caps, track hangers and power takeoff trolleys, as called for on the plans.

Track sections shall be one-piece, 13 gauge, brake pressed, zinc-coated sheet steel enclosures having a continuous slot in the bottom and a heavy double webbed rib in the top. Rolled or drawn copper bus bars, capable of carrying (175)(225) Amperes per pole continuously without overheating, shall be mounted within the steel enclosure on arc-resistant insulators.

Door track sections shall include two hinged doors in the bottom for insertion and removal of trolleys. Door openings shall have a mechanical polarization to insure proper polarity of the trolleys.

Track supported trolleys shall be Cat. No._____ as listed in the Feedrail Catalog. They shall have a zinc-plated sheet steel chassis with metal wheels for support.

Horizontal guide wheels shall run in the slot of the Feedrail track to prevent slewing and maintain alignment. Spring-loaded brush contacts shall be mounted on arc-resistant insulation. When inserted in the Feedrail track, the contacts shall align with the bus bars at all times.

Trolleys shall be mechanically polarized with respect to door track sections.

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Feedrail®

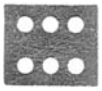
FRS 100 & 200 Series (Feedrail® '60')

T11382

S21701

T06528P

T0096P


S13392

T05577P

T00816

T00824P

S13637P

S16851

S15908

W05062P

S20653A

S21739E

T01868

T06649P

T01034P

T16747

S14242A

T23379R

T00594P

T16743

Track Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T11382	10 ft. Bus Bar	–
T15046A	5 ft. Bus Bar	–
S21701	Bus Bar Insulator Support (For straight track only)	–
T06528P	Bus Bar Insulator Support (For curve track only)	155-3
T00926P	Bus Bar Connector Assembly	190-3
S13392	Bus Bar Connector Insulator	–
T05577P	Feed-In Terminal Assembly (1-Pole)	170-1
T00816	Feed-In Terminal Spacer (2 required per feed box)	155-7
T00824P	Bus Bar Terminal Spacer	155-4
S13637	Transfer Nose Insulator	155-27
S13637P	Transfer Nose Insulator with Screw	–
S16851	Sectionalizing Insulator with Screws	155-50
S15908	Special Sectionalizing Insulator with Screws (1-Pole)	155-52
W05062P	Door Assembly (2 required per door section)	185-5
S20653A	Polarizing Strip (Used with plug-in jacks for proper insertion into track)	–
S21739E	Slot Enclosure, 10 ft. length (Used with plug-in jacks to cover track openings for maximum operator safety)	–

Track Cleaning Tool Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T01868	Dust Remover Bristle Brush	115-16
T06649P	Cleaner Stone Assembly	115-27

5 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T01034P	3 Pole Trolley Body Assembly with Copper Graphite Roller Contacts	110-3
T01933P	2 Pole Trolley Body Assembly with Copper Graphite Roller Contacts	110-6
T16747	Copper Graphite Roller Contact Assembly	115-12

15 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
S14242A	3 Pole Trolley Body Assembly with Copper Graphite Brush Contacts	110-30
S14242B	2 Pole Trolley Body Assembly with Copper Graphite Brush Contacts	110-31
T23379R	Copper Graphite Brush Contact Assembly	115-42
T00594P	3 Pole Trolley Body Assembly with Bronze Brush Contacts	110-1
T01934	2 Pole Trolley Body Assembly with Bronze Brush Contacts	110-5
T16743	Bronze Brush Contact Assembly (For stationary service only)	115-4
T03155A	3 Pole Trolley Body Assembly with Silver Tungsten Brush Contacts	–
T03155B	2 Pole Trolley Body Assembly with Silver Tungsten Brush Contacts	–
T23390R	Silver Tungsten Brush Contact Assembly	–

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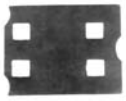
Feedrail®

FRS 100 & 200 Series (Feedrail® '60')

W11311P

T16742

T16796


T16795

T04414

T04415

T16363

T16364

W04378P

T04418P

T11248

T05432

S16567

5 & 15 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
W11311P	Trolley Body Only	110-7
S16719DP	Trolley Body Mounting Screws, Qty. 10	150-28
T16742	Chassis Assembly	120-1
T16796	Chassis Liner	155-10
S23367	Chassis Liner with 4 Screws	–
T16795	Contact Retaining Plate	155-13
307145	Contact Retaining Plate Screw	150-8
T11314	Cabinet-Gondola (For fusible trolleys only)	130-1

20 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T04414	Copper Graphite Brush Contact Assembly with Springs (Outside)	115-24
T04415	Copper Graphite Brush Contact Assembly with Springs (Center)	115-25

30 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T16363	Copper Graphite Brush Contact Assembly (Outside)	–
T16364	Copper Graphite Brush Contact Assembly (Center)	–

20 & 30 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
W04378P	Trolley Body Only	110-13
S16719DP	Trolley Body Mounting Screws, Qty. 10	150-28
T04418P	Chassis Assembly (For Standard Trolley)	120-13
T11248	Chassis Assembly (For Transfer Type Trolley)	120-19
T05432	2 Piece Terminal Insulator	155-16
S16567	Terminal Connector	170-6
T11314	Cabinet-Gondola (For fusible trolleys only)	130-1

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Feedrail®

FM Series (Multi-Conductor Trolley Service 2,3, and 4 Pole)

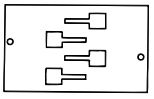
T11382

T00926P

U14636

T15236P

T10242


T20808

S15908

T20111

S12981

T06649P

S15056

S21304

T23338R

T23378R

Track Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T11382	Bus Bar, 10 ft. length	190-33
T15046A	Bus Bar, 5 ft. length	–
T00926P	Bus Bar Connector Assembly	190-3
U14636	Bus Bar Insulator with Insert	–
U14636A	Bus Bar Insulator without Insert	–
T15236P	Feed-In Terminal Assembly	–
T10242	End Feed Terminal (Slot Half Way)	170-9
S14151	End Feed Terminal Lug (No Slot)	170-10
T20808	Center Feed Terminal Spacer	––
S15908	Sectionalizing Insulator with screws (1-Pole)	155-52
T20111	Replacement Door Assembly. Two required for each door section.	–

Track Cleaning Tools

Part No.	Description	Ref. Old Cat. No.
S12981	Dust Remover Bristle Brush	115-46
T06649P	Cleaner Stone Assembly	115-27

5 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
S15056	Copper Graphite Roller Contact Assembly with Lug	115-49

15 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
S21304	4 Pole Trolley Body Assembly with Copper Graphite Brush Contacts, including 4 mounting screws	–
S21303	3 Pole Trolley Body Assembly with Copper Graphite Brush Contacts, including 4 mounting screws	–
S21302	2 Pole Trolley Body Assembly with Copper Graphite Brush Contacts, including 4 mounting screws	–
T23338R	Copper Graphite Brush Contact Assembly with Lug	–
T23388R	Silver Tungsten Brush Contact Assembly with Lug	–

30 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T23378R	Copper Graphite Brush Contact Assembly with Lug	–
T23389R	Silver Tungsten Brush Contact Assembly with Lug	–

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Feedrail®

FM Series (Multi-Conductor Trolley Service 2,3, and 4 Pole)

T20971

T21204

U20648

T20652

T05714

S21357

S16858

T096690

T09942

T09944

U09740

U10056P

5, 15 & 30 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T20971	Chassis Assembly	–
T21204	Chassis Assembly, Transfer Type	–
U20648	Trolley Body only	–
T20652	Contact Retaining Plate	–
T05714	Undercarriage Wheel Assembly	20-38
T16264	Undercarriage Wheel Assembly with Sealed Wheels	20-122
S21357	Main Wheel (1.062" dia.) with Axle	20-148
S21358	Sealed Main Wheel (1.102" dia.) with Axle	20-149
S16858	Guide Wheel (1⅛" dia.) with Axle	20-8
S16875	Sealed Guide Wheel (1⅛" dia.) with Axle	20-105
T09690	Trolley Bracket, 1⅛" dia. hole	20-77
T09942	Trolley Bracket and Cable Clamp Assembly with Lug	65-23
T09944	Trolley Bracket and Bushing Assembly	65-25
U09740	Pulling Bracket for Cabinet Type Trolleys, with Chains	20-74
U10056P	Pulling Bracket for Non-Cabinet Type Trolleys, with Chains	20-78

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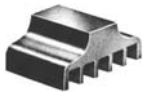
FX Series (Multi-Conductor Trolley Service 4 and 5 Pole)

T11382

T00926P

U12251

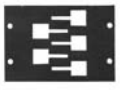

S12263

T15235

T15236P

T10242

S14007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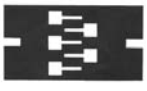
S15105

S12256

T12402

S16183

S15908

W10379

S12981

T06649P

S15056

T14395A

T14395B

T23338R

T23378R

Track Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T11382	Bus Bar, 10 ft. length	190-33
T15046A	Bus Bar, 5 ft. length	–
T00926P	Bus Bar Connector Assembly	190-3
U12251	Bus Bar Insulator with Insert	155-36
S12263	Bus Bar Insulator without Insert	155-37
T15235	Transfer Nose Insulator	155-35
T15236P	Feed-In Terminal Assembly	–
T10242	End Feed Terminal (Slot Half Way)	170-9
S14151	End Feed Terminal Lug (No Slot)	170-10
S14007	End Feed Terminal Bar	170-11
S15364	Center Feed Terminal Spacer	155-53
S15105	Center Feed Terminal Spacer for Low Level Box	155-54
S12256	End Cap Bus Bar Terminal Spacer	155-39
T12402	End Feed Terminal Spacer	55-36
S16183	Sectionalizing Insulator with screws (5-Pole)	155-48
S15908	Sectionalizing Insulator with screws (1-Pole)	155-52
W10379	Replacement Door Assembly. Two required for each door section.	85-25

Track Cleaning Tools

Part No.	Description	Ref. Old Cat. No.
S12981	Dust Remover Bristle Brush	115-46
T06649P	Cleaner Stone Assembly	115-27

5 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
S15056	Copper Graphite Roller Contact Assembly with Lug	115-49

15 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T14395A	5 Pole Trolley Body Assembly with Copper Graphite Brush Contacts	110-25
T14395B	4 Pole Trolley Body Assembly with Copper Graphite Brush Contacts	110-24
T23338R	Copper Graphite Brush Contact Assembly with Lug	–
T23388R	Silver Tungsten Brush Contact Assembly with Lug	–

30 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T21761A	4 Pole Trolley Body Assembly with Copper Graphite Brush Contacts	–
T21761B	5 Pole Trolley Body Assembly with Copper Graphite Brush Contacts	–
T23378R	Copper Graphite Brush Contact Assembly with Lug	–
T23389R	Silver Tungsten Brush Contact Assembly with Lug	–

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Feedrail®

FX Series (Multi-Conductor Trolley Service 4 and 5 Pole)

T12430P

T12723

W12253P

T12254P

T05714

S19305

S16858

T09690

T09942

T09944

U09740

U10056P

5, 15 & 30 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T12430P	Chassis Assembly	20-92
T12723	Chassis Assembly, Transfer Type	20-93
W12253P	Trolley Body only	110-41
T12254P	Contact Retaining Plate	155-32
305394	Contact Retaining Plate Plastic Screw	150-32
T05714	Undercarriage Wheel Assembly	20-38
T16264	Undercarriage Wheel Assembly with Sealed Wheels	20-122
S19305	Two Main Wheels (1 1/16" dia.) with Axle	20-68
S16858	Guide Wheel (1 1/16" dia.) with Axle	20-8
S16875	Sealed Guide Wheel (1 1/16" dia.) with Axle	20-105
T09690	Trolley Bracket, 1 1/16" dia. hole	20-77
T09942	Trolley Bracket and Cable Clamp Assembly with Lug	65-23
T09944	Trolley Bracket and Bushing Assembly	65-25
U09740	Pulling Bracket for Cabinet Type Trolleys, with Chains	20-74
U10056P	Pulling Bracket for Non-Cabinet Type Trolleys, with Chains	20-78

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Feedrail®

FR 100 Series (Feedrail® '100'

S16711

U21145

U11972

T12058

S16907

301269

W10379

T13811

U05519

U10270

T06301P

T06390P

U20019C

S20541X

S20541Y

S20541Z

U16538C

S20539X

S20539Y S20539Z

Track Replacement Parts

Part No.	Description	Ref. Old Cat. No.
S16711	Bus Bar with Screws, 10 ft.	90-1
S16719AP	Bus Bar Screws, Qty. 10	50-15
U21145	Bus Bar Insulator (For straight track)	–
U11972	Bus Bar Insulator with Steel Insert (For curved track)	55-27
T12058	Bus Bar Insulator (For either side of doors)	55-31
S16907	Sectionalizing Insulator	55-21
301269	Connection Bar Fastening Screws (For bottom of track casing)	50-39
W10379	Door Assembly (Two required for each door section)	85-25
T13811	End Feed Terminal Assembly	70-19
U05519	Center Feed Terminal Assembly (For between track sections)	70-2
U05520	Center Feed Terminal Assembly (For built-into a track section)	70-11
U10270	Center Feed Terminal Assembly (For low level center feed box)	70-22

Track Cleaning Tools

Part No.	Description	Ref. Old Cat. No.
T06301P	Dust Remover Bristle Brush (1-Pole)	15-84
T06390P	Cleaner Stone Assembly (1-Pole)	15-86

'700' & '800' Series 20/40A Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
U20019C	3 Pole Trolley Body Assembly with Roller Contacts	10-50
U20019D	2 Pole Trolley Body Assembly with Roller Contacts	10-51
S20541X	"X" Roller Contact Assembly (Outside)	15-217
S20541Y	"Y" Roller Contact Assembly (Center)	15-218
S20541Z	"Z" Roller Contact Assembly (Outside)	15-219

'700' & '800' Series 30 & 60 Amp Trolley and Crane & Hoist 20-60 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
U16538C	3 Pole Trolley Body Assembly with Copper Graphite Brush Contacts	10-46
U16538D	2 Pole Trolley Body Assembly with Copper Graphite Brush Contacts	10-47
S20539X	"X" Copper Graphite Brush Contact Assembly (Outside)	15-211
S20539Y	"Y" Copper Graphite Brush Contact Assembly (Outside)	15-212
S20539Z	"Z" Copper Graphite Brush Contact Assembly (Outside)	15-213
U20140C	3 Pole Trolley Body Assembly with Silver Tungsten Brush Contacts	10-48
U20140D	2 Pole Trolley Body Assembly with Silver Tungsten Brush Contacts	10-49
S20540X	"X" Silver Tungsten Brush Contact Assembly (Outside)	15-214
S20540Y	"Y" Silver Tungsten Brush Contact Assembly (Outside)	15-215
S20540Z	"Z" Silver Tungsten Brush Contact Assembly (Outside)	15-216

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Feedrail®

FR 100 Series (Feedrail® '100')

T16491

T20007

S20529

S20031

T05714

S21357

S16858

T09690

T09942

T09692
T09936

T09943

T09944

U09740

U10056P

T06488

S02979

T02241

S21301

S21305

T05895

T05896

T06467

S19301

S19302

S19303

S16919

U05744

T11756

'700' & '800' Series Trolley and Crane & Hoist Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T16491	Chassis Assembly	20-144
T21191	Chassis Assembly with Sealed Wheels	20-146
T20007	Chassis Assembly, Transfer Type	20-145
T21192	Chassis Assembly, Transfer Type with Sealed Wheels	20-147
S20529	Trolley Body only with Inserts and 4 Body Mounting Screws	10-52
W15817	Trolley Body only with Inserts	-
309484	Trolley Body Body Mounting Screw	50-122
S20031	Insulating Liner	55-72
T05714	Undercarriage Wheel Assembly	20-38
T16264	Undercarriage Wheel Assembly with Sealed Wheels	20-122
S21357	Main Wheel (1.062" dia.) with Axle	20-148
S21358	Sealed Main Wheel (1.102" dia.) with Axle	20-149
S16858	Guide Wheel (1⅛" dia.) with Axle	20-8
S16875	Sealed Guide Wheel (1⅛" dia.) with Axle	20-105
T09690	Single Trolley Bracket, 1⅛" dia. hole	20-77
T09942	Single Trolley Bracket and Cable Clamp Assembly with Lug	65-23
T09692	Duplex Trolley Bracket, ⅞" dia. hole	20-73
T09936	Duplex Trolley Bracket, 1⅛" dia. hole	20-75
T09943	Duplex Trolley Bracket and Cable Clamp Assembly with Lug	65-24
T09944	Duplex Trolley Bracket and Bushing Assembly	65-25
U09740	Pulling Bracket for Cabinet Type Trolleys, with Chains	20-74
U10056P	Pulling Bracket for Non-Cabinet Type Trolleys, with Chains	20-78
T06488	Universal Joint Assembly for Duplex Trolleys	20-51
S02979	Swivel Joint Assembly (For Crane & Hoist and Transfer Type Duplex Trolleys	20-29
T02241	Link (For adapting gondola to trolley)	20-47
U20128	Hanger Cabinet - 20 & 30 Amp Single Trolleys	–
U20129	Box Cabinet - 20 & 30 Amp Single Trolleys	–
W20130	Box Cabinet - 20 & 30 Amp Single Trolleys with Receptacle	–
U20132	Beveled Cabinet - 20/30A Single Trolleys with Receptacle, Non-Fused	–
U20132A	Beveled Cabinet - 20/30A Single Trolleys with Receptacle, Fused	–
S21301	Junction Box - 20/30A Crane & Hoist Single Trolleys	–
S21305	Junction Box - 60A Crane & Hoist Duplex Trolleys	–

Special Service 100A Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T05895	"X" Silver Tungsten Brush Contact Assembly	15-77X
T05896	"Y" Silver Tungsten Brush Contact Assembly	15-78Y
T06467	"Z" Silver Tungsten Brush Contact Assembly	15-79Z
S19301	"X" Silver Tungsten Brush Contact with Spring	15-88X
S19302	"Y" Silver Tungsten Brush Contact with Spring	15-89Y
S19303	"Z" Silver Tungsten Brush Contact with Spring	15-90Z
S16919	Chassis Assembly	20-53
S16921	Chassis Assembly with Sealed Wheels	20-116
U05744	Chassis Adapter	20-52
T11756	Chassis Liner	55-19

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Feedrail®

Discontinued 100 Amp Feedrail® Products

U21145

U11972

T12058

S16907

U00193P

U06383D

U06383E

U06383F

U13725P

T21619A

T21619B

T21619C

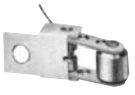
U00120P

U00194P

S00126P

U02122P

U06383D


U06383E

U06383F

T13556

T21619A

T21619B

T21619C

U01979P

T02238P

T08531

T01981P

Feedrail® '600' Track Replacement Parts

Part No.	Description	Ref. Old Cat. No.
U21145	Bus Bar Insulator (For straight track)	–
U11972	Bus Bar Insulator with Steel Insert (For curved track)	55-27
T12058	Bus Bar Insulator (For either side of doors)	55-31
S16907	Sectionalizing Insulator	55-21

'Standard' Type Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
U00193P	3 Pole Trolley Body Assembly with Roller Contacts	10-1
U05428C	2 Pole Trolley Body Assembly with Roller Contacts	10-6
U06383D	"X" Roller Contact Assembly	15-41X
U06383E	"Y" Roller Contact Assembly	15-42Y
U06383F	"Z" Roller Contact Assembly	15-43Z
U13725P	3 Pole Trolley Body Assembly with Copper Graphite Brush Contacts	10-37
U13728A	2 Pole Trolley Body Assembly with Copper Graphite Brush Contacts	10-38
T21619A	"X" Copper Graphite Brush Contact Assembly	15-144X
T21619B	"Y" Copper Graphite Brush Contact Assembly	15-145Y
T21619C	"Z" Copper Graphite Brush Contact Assembly	15-146Z
U00120P	Trolley Body Only	10-3
300819	Body Mounting Screws with Lockwashers	50-72
U00194P	Chassis Assembly	20-1
U13982	Chassis Assembly with Sealed Wheels	20-107
S00126P	Insulating Liner	55-1

'C' Type Trolley Replacement Parts *

Part No.	Description	Ref. Old Cat. No.
U02122P	3 Pole Trolley Body Assembly with Roller Contacts	10-16
T05421A	2 Pole Trolley Body Assembly with Roller Contacts	10-20
U06383D	"X" Roller Contact Assembly	15-41X
U06383E	"Y" Roller Contact Assembly	15-42Y
U06383F	"Z" Roller Contact Assembly	15-43Z
T13556	3 Pole Trolley Body Assembly with Copper Graphite Brush Contacts	10-39
T13727A	2 Pole Trolley Body Assembly with Copper Graphite Brush Contacts	10-40
T21619A	"X" Copper Graphite Brush Contact Assembly	15-144X
T21619B	"Y" Copper Graphite Brush Contact Assembly	15-145Y
T21619C	"Z" Copper Graphite Brush Contact Assembly	15-146Z
U01979P	Trolley Body Only	10-17
300819	Body Mounting Screws with Lockwashers	50-72
T02238P	Chassis Assembly	20-26
T13588	Chassis Assembly with Sealed Wheels	20-100
T08351	Chassis Assembly, Transfer Type	20-63
T14675	Chassis Assembly, Transfer Type with Sealed Wheels	20-108
T01981P	Insulating Liner	55-14

* Above Trolley Body Assemblies, Contacts, Trolley Body only and Liner are also used on "D" Type Trolleys.

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Feedrail®

FH Series (Feedrail® 'HD')

U06335

S16885

S05621

S19321

Track Replacement Parts

Part No.	Description	Ref. Old Cat. No.
U06335	175A 10 ft. Bus Bar	290-4
U06336	225A 10 ft. Bus Bar	–
U22850A	175A Bus Bar Insulator Assembly	–
U22850B	225A Bus Bar Insulator Assembly	–
S16885	Bus Bar Insulator Mounting Screw Assembly	255-25
S05621	175A Bus Bar Splice Bar	290-7
S23014	225A Bus Bar Splice Bar	–
301400	175A Splice Bar Screw (4 required per pole)	–
301401	225A Splice Bar Screw (4 required per pole)	–
T05661	175A Center Feed Terminal Assembly (1-Pole)	270-12
T23019	225A Center Feed Terminal Assembly (1-Pole)	–
T05656	175A End Feed Terminal Assembly (1-Pole)	270-17
T23015	225A End Feed Terminal Assembly (1-Pole)	–
S19321	Track Connection Bar with Screws	90-6
301269	Track Connection Bar Screw (4 required per bar)	50-39

Track Cleaning Tool Replacement Parts

Part No.	Description	Ref. Old Cat. No.
S15805	Cleaner Stone Assembly (1-Pole)	215-45
S04724	Cleaner Stone Spring (1-Pole)	220-33

W06940

175 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
T09789	Contact Assembly with Pigtail (2 required per pole)	215-47
T07065	Contact Spring (2 required per contact assembly)	215-24
T22768A	Contact Retainer (1-Pole)	–
T22767	Current Bar (1-Pole)	–
U22499	Terminal Barrier	–
W22483	Trolley Body only	–
W06940	Chassis Assembly	220-6
U08501E	Pulling Bracket with Eye Bolts	220-14

225 Amp Trolley Replacement Parts

Part No.	Description	Ref. Old Cat. No.
U22825	Contact & Terminal Lead Assembly (2 required per pole)	–
S22827	Contact Liner (1 required per contact & lead assembly)	–
T22844	Contact Retainer (1 required per contact & lead assembly)	–
S08847	Insulator Bushing (2 required per contact & lead assembly)	255-40
W22821B	Trolley Body only with Inserts	–
U22823A	Chassis Assembly	–
U08501E	Pulling Bracket with Eye Bolts	220-14

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